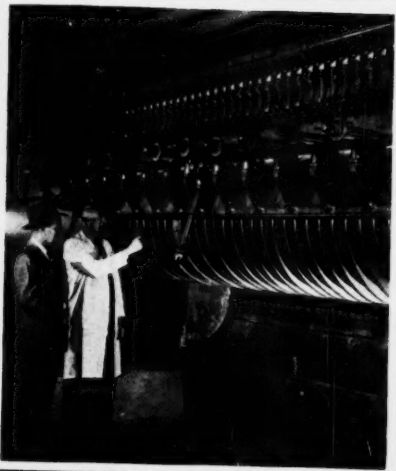


Chemical Week—

March 23, 1952



Fat taxes flatten profits; that's
tally of '51's ledgers; ahead:
dim for '52 p. 15

④ Du Pont's Jones: He puts his
finger on how and how not to
sell equipment p. 31

Overcoming fibers' shortcomings:
new four-in-one resin pushes into
tertile finish melee p. 37

④ Chloromycetin production: the
only "all-synthetic" antibiotic
shifts now doubled output . . . p. 57

"Smell appeal" ups sales; odor
theories conflict, but research
points to p. 83



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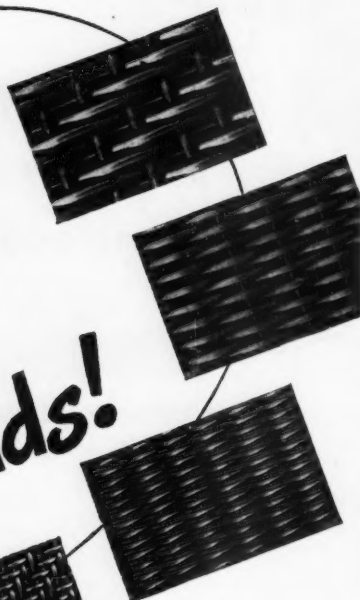


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OPINION . . .

Soluble Mercurials

TO THE EDITOR: May I congratulate you and the author, Mr. S. S. Block, on the excellent report covering chemicals for fungus control in your Jan. 26 issue. . . .

In the section on organic mercurials for slime control, the statement is made that one product is unique because of its high water solubility.

Monsanto (Canada) Ltd. has been marketing a water-soluble mercurial based on ortho-cresol for over a year . . . has recently introduced another one based on *o*-phenyl phenol.

I believe your readers will be interested in this development. . . .

A. MONSAROFF

Vice President

Monsanto (Canada) Limited
Montreal, Can.

Don't Give it Up

TO THE EDITOR: . . . I have just read your story on the St. Lawrence Seaway (The Seaway: For Better or for Worse) Feb. 16th issue. . . .

This seems a very fair factual article . . . I hope will be taken to heart by your readers. It would be little short of ridiculous for the United States to give up now the partial control of the St. Lawrence River which it has so jealously protected for 169 years.

GEORGE D. AIKEN

United States Senate

Committee on Agriculture and

Forestry

Washington, D. C.

Fairness, Range

TO THE EDITOR: . . . Let me commend your article "The Seaway: For Better or for Worse," (Feb. 16) for its fairness of approach . . . the range of argument compressed in so small a space . . . for the emphasis on Canadian interests. Trying to be as brief in turn, there are just a few points I would like to make. . . .

My general criticism is the scant reference to the importance of the associated power development. Certainly Canada is in urgent need of both power from the Long Sault Rapids and the navigation facilities. Ontario can ill afford to see this hydro power run to waste while turning increasingly to steam-generated electricity at more than twice the delivered cost.

The same is true for the prospective market areas in the U.S. . . .

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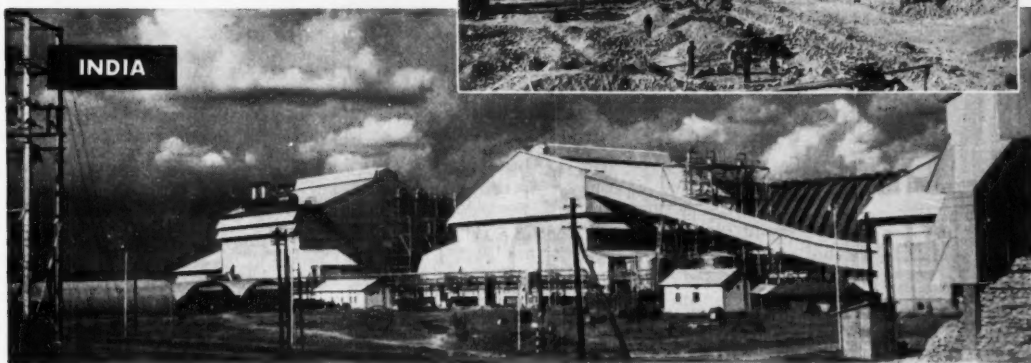
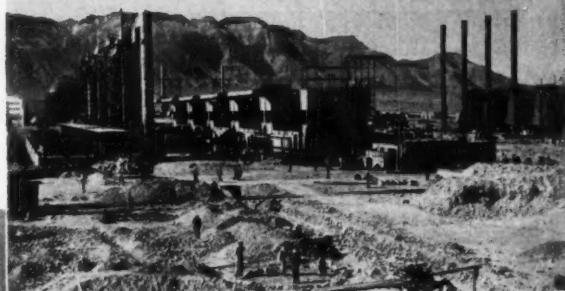
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EGYPT—This large Suez project will eventually produce 200,000 tons of calcium nitrate annually from limestone and nitric acid. The intermediate product, ammonia, is manufactured from the *waste gas of a nearby petroleum refinery*.

INDIA—This large plant at Sindri is designed to produce 350,000 tons of ammonium sulfate per year. Major raw materials are *coal, coke and gypsum*—all indigenous to India.

Chemico has a wide experience in the utilization of these and other raw materials for the production of ammonia and nitrogenous fertilizers. If you are thinking of producing ammonia or nitrogenous fertilizers, Chemico will be glad to consult with you and make specific recommendations.



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OPINION

port-import economy. Our products must be competitive in world markets, it is vital that we have the lowest possible costs for both power and transportation.

Your article suggests that Canada is considering an immediate start on a 27-foot canal system in the international part of the St. Lawrence, separate from and without waiting for a power development there. Not so. There has been some public discussion of the technical possibility, but Canada urgently wants the power as well as the navigation facilities, and it would be less costly to provide the latter in conjunction with a power development. To achieve this dual goal the practical alternatives are:

(a) Approval of the Canada-U.S.A. agreement of 1941 for a full partnership development. (b) An international power development with an associated all-Canadian seaway.

On the subject of iron ore, it is true that interior steel mills can get ore without the seaway, but at a price. The seaway will enable them to get ample supplies at the lowest cost from Labrador, a matter of great importance to both our economies, built as they are on cheap steel. For the Labrador development itself, the seaway access to these markets would mean an immediate doubling of the present production goal, and the prospect of still further growth in future sales.

As for the opposing railways, I think the seaway will bring them net benefits. It may take away some traffic in the low rate brackets, but it promises to stimulate industrial expansion that will bring new traffic paying higher rates. The reports of industrial sites purchased with an eye on the seaway suggest that this is no idle speculation. Much the same arguments apply in the case of seaports and other opposing interests. The interplay of economic forces is more complex and more potent than they realize.

Finally, the success of the seaway will not depend on the ocean vessels it can attract. Most of the traffic will be carried in inland vessels built for that service. Ore carriers out of Seven Islands, for example, could return with grain for Montreal or beyond at rates that would not attract an ocean vessel unless it too had a pay load upbound.

Again, some of the ocean vessels that do enter may be built specifically for the purpose, just as there are now German, Dutch, and other foreign vessels trading into the lakes that were built to pass the 14-foot canals. For the others, the pertinent question is

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OPINION

not their maximum draft but the draft to which they are loaded in practice, and the fact is that over 90 per cent of the vessels entering or leaving major ocean ports are loaded no deeper than the seaway could accommodate.

I value this opportunity to clarify the Canadian position and to deal with some of the points at issue.

LIONEL CHEVRIER

Minister of Transport
 Dominion of Canada
 Ottawa, Canada

Crocodile Tears?

TO THE EDITOR: In your news report on the St. Lawrence Seaway (Feb. 16) giving the "pros" and "cons" of this controversial subject, the "pros" are certainly wrong in saying the greatest growth in the steel industry has come on the Eastern seaboard. The largest expansion in the industry's history is taking place in the Midwest steel centers.

U.S. Steel is building in New Jersey, not because of any ore problem, but because the U.S. Supreme Court basing point decision makes proximity to markets just as important as proximity to raw materials.

The "pros" aren't worrying either about the ability of the costlier taconites to compete with foreign high grade ores. It's the other way around; . . . the five smaller steel companies that have invested in Labrador ore and are pressing for the waterway are concerned about their high-grade ore being able to compete with the taconites. That's the reason they want this subsidized transportation.

Concerning Alcoa's having to haul power from as far away as Pennsylvania for its aluminum plant at Massena, N. Y., the question is, Why is an aluminum plant located there? This is the story:

In World War II, the Public Power bureaucrats caused this plant to be built at this site of the proposed St. Lawrence power plant, not that the erection of the power plant was in sight but because it would give them added ammunition for their St. Lawrence fight. Similarly, they caused the plant to be reactivated in the present "crisis." Power is having to be brought from far away just as it was before, and the waterway proponents and Public Power bureaucrats are pointing to it with crocodile tears and saying: "Oh, what a bloody shame!"

If the power plant—which would take seven years to build—is for . . . manufacturing aluminum with subsidized power, the principal effect of

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OPINION

the subsidy would be in peacetime production of aluminum, where subsidy is certainly unwarranted.

CARLISLE BARGERON
National St. Lawrence Project
Conference
Washington, D. C.

Scratch "By-Product"

TO THE EDITOR: We have been especially interested in your article entitled "Pinch in Nitrogen" (Feb. 9).

It has been the endeavor of this industry and this organization for the past six years to delete the word "by-product" from the language of the industry. Toward this end we have had the complete cooperation of most governmental agencies, starting with the Bureau of Mines. As recently as February 7th . . . the President of the United States amended the original Executive Order 10161 . . . to delete the word "by-product." . . . It now reads: "The term 'solid fuels' shall mean all forms of anthracite, bituminous, sub-bituminous, and lignitic coals; coke; and coal chemicals."

Almost all papers are referring to coke-oven products as coke and coal chemicals. The word "by-products" has been a misnomer ever since the term was first used . . . for the products do not come by accident nor are they left over but must be recovered through the operation of expensive apparatus.

We, therefore, bespeak your assistance in referring to the products of the chemical recovery coke oven as co-products along with the production of coke and not as "by-products." . . .

May we also state that synthetic sulfate of ammonia made with spent sulfuric acid may be more impure than coke-oven sulfate made with virgin acid. For all practical purposes coke-oven ammonium sulfate is just as pure as the synthetic.

Your article seems to infer that there is something inferior in the . . . quality of coke-oven ammonium sulfate compared to synthetic ammonium sulfate.

We are reasonably sure that . . . you will find that this is not the case.

SAMUEL WEISS
American Coke and Coal
Chemicals Institute
Washington, D. C.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

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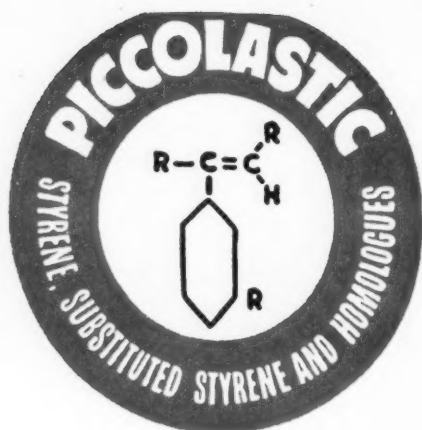
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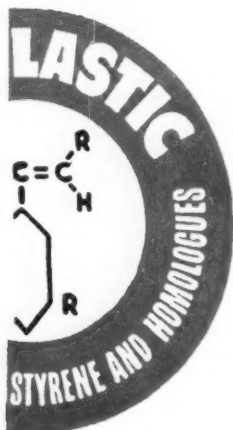
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NEWSLETTER

The Atomic Energy Commission is dazed this week by a bombshell. It was dropped by former AEC Research Director Kenneth S. Pitzer, who denounced the Commission and some of its advisory committees for timidity and lack of vision in pressing forward the program.

The advisory committees were formed, suggests Pitzer, to shield the Commission from criticism if a project should fail. Now they hinder progress. "We need men," says Pitzer, "who will specialize in pointing out new fields to explore rather than in double-checking decisions . . ."

Pitzer also scores Government monopoly, asks for more initiative in hiking efficiency, cutting costs, overcoming smug sluggishness.

One Government operation came to an end last week as Schering Corp., held since the war by the Office of Alien Property, was sold to a group of investment houses headed by Merrill Lynch, Pierce, Fenner & Beane; Kidder, Peabody & Co.; and Drexel & Co.

The winning bid was \$29,131,960—about \$66 per share of outstanding stock. The new owners plan to split it four-for-one, after which it will be offered at public sale.

Only three chemical firms—Michigan Chemical Corp., National Dairy Products, and Pabst Brewing Corp.—submitted bids. The other five bids, including the winner, were from investment houses—who, of course, may have been representing chemical "silent partners."

The whole Alien Property setup is going to get a going-over, threatens Senator Wiley. He alleges that OAP is a "super gravy train," has won his fight to get money for an investigation.

The Senate Rules Committee approved late last week a resolution authorizing a subcommittee to spend \$100,000. Senators McCarran and Willis Smith supported the move. Smith (Dem., N. C.) will head up the subcommittee.

Utilities near Lake Erie are casting a covetous eye on Western Canadian oil. They figure it could be piped to the Duluth area, tankered down the lakes to the south shore of Lake Erie for about 4¢ a gallon. If it didn't displace coal as a power source, it would at least hold coal producers in line pricewise.

They also foresee more customers as the Erie area becomes a petrochemical center. There's already salt, water, power, limestone and coal there, and Canadian oil plus sulfur from pyrite roasting would round out an impressive roster of raw materials.

Ultrasonic paint mixing—including pigment grinding as well as product emulsification—is moving closer to reality. Brush Development Co. is working closely with Sears, Roebuck.

In the early development Brush had nibbles from other large paint-makers; but Sears chipped in to support the work.

"It's a swell place to visit, but . . ." That's not the way New York City's chemical engineers feel, apparently, for the State Employment Service reports a surplus there, although a severe shortage exists throughout most of the country.

Price Stabilizer Ellis Arnall last week trotted out some chemical price statistics to help the Administration scuttle the Capehart amendment—but his figures weren't very impressive.

Arnall claimed that in seven months under the amendment, customers had to shell out an extra \$14.6 million for chemicals.

What Arnall didn't point out was that chemical production in December alone was \$1.4 billion—and even if all the seven-months' increase came during that one month, the total hike would have been only 1%.

More significant are price declines in spite of higher ceilings. The Bureau of Labor Statistics' chemical price index, has declined 7.9% since the Capehart amendment went into effect.

Lower chemical prices—indicative of a softening market, together with lower profits after taxes and higher construction costs, are causing chemical management to take a closer look at expansion plans.

Here and there a proposed project has been deferred. There's no question of "recession," but companies are appraising future markets far more carefully before sinking their fewer dollars into costlier facilities.

An antitrust suit has been settled with the acceptance of a consent judgment by five carbon dioxide companies: Liquid Carbonic (Chicago), Air Reduction (New York), Wyandotte Chemicals (Wyandotte, Mich.), International Carbonic Engineering—allegedly a patent holding firm (Wilmington), and Pure Carbonic (New York).

All of the defendants must end contracts under which they bought total output of smaller producers, must reduce purchases of carbon dioxide (including dry ice) in New York-Philadelphia and Chicago-Detroit areas.

Liquid Carbonic and Pure Carbonic may not extend their market areas; and they, with Wyandotte, must sell on "non-discriminatory terms."

International Carbonic may not enforce its principal patent, and all defendants must license their patents on "reasonable terms."

If you've been paying premium prices for engineers, you can expect a crackdown by the Office of Salary Stabilization.

Loud complainer to the OSS is the Atomic Energy Commission, which is hard-pressed to man its expanding facilities in competition with private industry. Its salary scale is good—but not by post-Korea standards. Defense Mobilizer Wilson is upset too, since premium salaries boost the price tag on defense.

As a first step OSS will query engineering firms on their practices. Then it will establish firm controls, crack down on violators.

Texas industrialists are waiting for three separate "up in the air" projects to be pinned down:

Carbide & Carbon Chemicals has been granted permission to use 41 billion gallons of water a year from the Guadalupe River. The company has optioned a site for its proposed \$35 million plant near Seadrift, but nothing seems to be final as yet.

Morton-Withers Chemical Co. (Greensboro, N.C.) plans a \$2 million plant in Texas to make liquid petroleum sulfonates for addition to lube oils. The firm has received a certificate of necessity.

Imperial Chemical Industries, through its American subsidiary, Arnold Hoffman & Co., may shortly build in the Gulf area. Questioned when he was inspecting Houston last week, ICT's development director, W. N. Lutyens, conceded expansion plans, said, "It's premature to talk."

... The Editors

**Pardon My
Ignorance**
by Pinet



*I thought A CATALYST SUPPORT was a crutch for a
tottering tom . . . until I got the facts from Norton*

Now I Know:

A catalyst support, to more and more processing firms, means Norton ALUNDUM* spheres, rings or pellets of such purity and chemical stability that they assure end products free from contamination. Their patented controlled structure, high refractoriness and abrasion-resistance promise you greater yields over a longer service life.

In particular, it may pay you to investigate Norton spherical catalyst supports. Made in diameters from $\frac{1}{4}$ " to $\frac{3}{4}$ ", they provide you with such a uniform bed that channelling and pressure drop are reduced to a minimum.

Continuing research in catalyst supports is typical of the efforts Norton engineers are making to fit special refractories to your exact requirements.

So, if you have a high-temperature problem, complicated by chemical, electrical or physical variables, call in your nearby Norton refractories engineer. Or write to Norton Company, Refractories Division, 242 New Bond Street, Worcester 6, Massachusetts. Canadian representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.



NORTON CATALYST SUPPORTS can be supplied in CRYSTOLON*, MAGNORITE*, FUSED STABILIZED ZIRCONIA and MULLITE, as well as in ALUNDUM, compositions. Each has its own special properties as a catalyst support. Each has the chemical stability and purity that eliminate contamination of both catalyst and end product.



NORTON POROUS MEDIUMS are made of ALUNDUM (fused alumina) in a wide range of sizes and shapes in plates, tubes, discs, and diaphragms for filtration, diffusion, aeration and electro-chemical applications. Patented controlled structure makes them uniformly porous. Highly resistant to acid and alkaline conditions.

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

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KREELON CD combines the advantages of a quality detergent with a detergent-promoter, sodium CMC, in one homogeneous, rapidly dissolving product. Substituted for the alkylarylsulfonate detergent you're now using, in a properly

compounded household cleaner, it will give 20%-70% improvement in soil removal and whiteness retention. It promotes smooth, gentle, long-lasting suds . . . reduces skin irritation.

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*REG. U.S. PAT. OFF.



Wyandotte
CHEMICALS

BUSINESS & INDUSTRY

CHEMICAL COMPANY EARNINGS—Calendar 1951

(000 omitted)

	Total Sales		Pre Tax Earnings		Taxes		Net Earnings		4th Quarter Net	
	1951	1950	1951	1950	1951	%	1950	%	1951	1950
Air Reduction	116,131	89,062	19,852	16,173	12,914	63.0	7,548	46.7	7,462	6,625
Allied Chem. & Dye	502,027	406,042	106,706	74,035	66,159	62.0	32,822	44.3	40,549	41,213
American Agric. Chem.	52,222	47,950	8,108	6,961	4,200	51.8	2,825	40.6	3,908	4,136
American Cyanamid	389,000	322,000	83,300	69,739	48,500	58.2	38,000	51.6	34,789	33,739
Atlas Powder	51,673	42,412	5,368	5,128	3,335	62.1	2,565	50.0	2,033	2,563
Commercial Solvents	61,172	44,991	11,308	8,466	5,465	64.3	3,336	39.0	5,842	5,173
Davison Chem.	44,910	38,594	5,603	4,158	3,204	57.2	1,575	37.9	2,359	2,583
Diamond Alkali	80,749	55,702	19,984	10,035	13,310	66.6	5,206	51.9	6,674	4,829
Dow Chem.	385,731	273,365	121,890	78,379	83,415	68.4	37,555	49.2	38,675	38,624
Du Pont	1,531,000	1,297,000	512,000	422,000	305,000	71.3	227,000	53.6	147,000	195,000
Hercules Powder	222,513	165,535	43,926	28,211	30,270	68.9	14,662	50.3	13,656	14,529
Heyden Chem.	Not available									
Hooker Electrochem	39,688	27,897	10,507	7,055	6,950	66.1	3,285	46.6	3,577	3,770
Int. Minerals & Chem.	72,993	63,375								
Metheson Chem.	91,234	75,776	21,628	16,264	11,975	55.4	7,270	44.7	9,653	8,994
Monsanto Chem.	275,920	229,816	62,121	53,609	38,643	62.2	27,789	51.8	23,478	26,220
Newport Industries	22,518	18,030	4,741	2,466	2,787	58.6	1,020	41.4	1,954	1,446
Nitco Chem.	22,551	19,276	3,322	2,619	2,231	67.1	1,367	52.2	1,091	1,252
Penn. Salt Mfg.	47,555	39,981	10,173	8,169	6,395	62.9	4,163	51.0	3,527	4,006
Pittsburgh Coke & Chem.	48,663	38,012	9,800	4,846	6,707	68.4	2,058	42.6	3,063	2,788
Rohm & Haas	106,896	83,273	21,620	15,855	14,899	68.9	8,190	51.7	6,721	7,665
Union Carbide & Carbon	927,520	758,254	268,386	237,805	164,496	61.3	113,694	47.8	103,890	124,112
Victor Chem. Works	32,662	28,483	7,190	7,306	4,300	59.9	3,552	48.6	2,880	3,754
Virginia-Carolina Chem.	73,034	62,114	10,671	6,572	5,671	53.1	2,771	42.2	5,001	3,901
Company Total	5,199,789	4,235,960	1,368,196	1,064,871	900,126	65.8	546,245	50.4	467,881	539,037
Total—excluding Du Pont	3,668,789	2,938,900	856,198	662,871	435,426	62.5	219,245	48.2	220,661	344,037
Du Pont as % of Total	29.4	32.7	28.7	29.7	24.7	24.1	31.8	27.6

¹ Includes non-recurring \$5.8 million dividend from former holdings in Southern Alkali.² Calendar year ending Nov. 30, 1951³ Excluding dividend income from General Motors.

Profits: 'Adjustment' Over?

Most chemical company earning reports underline a single pattern: record sales, dipping profits.

Du Pont's report, out this week, shows sales up 18% and pre-tax earnings, 21%; but taxes were up 60%, lopping \$48 million (25%) off profits.

Adjustment to taxes and government control seems complete. Outlook for 1952: "stability" with rising sales, little or no added profit.

"Taxes!"—a fighting word to manufacturers six months ago—now has almost lost its punch. Instead, companies are realizing that there is little chance that they'll be lessened; hence, the only thing to do is learn to live with them.

The shock which companies experienced when tax boosts were made (CW, Nov. 10, '51) has two consolations, however.

First is that, in general, the commodity shortages and the dislocations which came with the Korean war have disappeared. (There are exceptions, viz., textiles.)

Second consolation to lower net is that just about everybody has a lower net this year. Only exceptions are such fields as antibiotics and petrole-

um with sales boosts steep enough to result in increased profits.

Variations in CW's 24 company compilation* were great—from a 38.2% increase to a 24.7% decrease. Overall, however, was a downtrend of 13.2%, though the total excluding Du Pont shows the much more moderate decrease of 6.8%.

Sales by the big three are up—Du Pont's by 18%, Carbide by 22% and Allied, 23%. Earnings before taxes show similar trends. Taxes bit deeply—Allied had better than a 100% increase—and all three show lower profits. Du Pont is off 24.7%, Carbide, 16.3% and Allied, 1.6%.

* Companies are picked to represent different fields, sizes. It is unwise, of course, to extrapolate their specific earning figures—no matter how "typical"—to the industry as a whole.

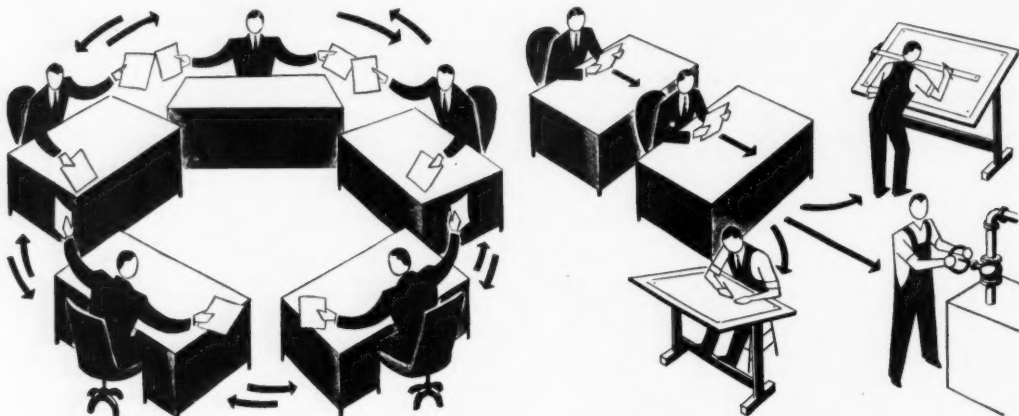
Profits after taxes is one of the few business statistics which has so far shown a downward trend. If you look at industrial activity, employment, salary or savings levels, you see continued high records.

Couple this with a steadily expanding and diversified market for chemicals and chemical products, and the indication is that while manufacturers will be pinched for expansion money, they won't go broke.

Confidence Ahead: Despite a realization that there will be some dislocations, industry is confident. The chemical process industries will produce \$57 billion worth of goods in 1952—up 30% over 1950.

The chemical industry alone spent \$1.26 billion for capital improvements in 1951, hopes to spend \$1.46 billion—78% for expansion—in 1952. Of Government-certified expansion, \$150 million is now on stream; a total of \$600 million will be ready by fall, and \$900 million will be operating by spring of 1953.

Some dire business predictions have been made, but they are in the over-all contradicted by these plans of industry. Federal spending alone is a factor which underlies a high level of business activity for 1952.



FLOW OF IDEAS: Whether circular or inverted "Y" pattern, the rate must be increased.

Weakness; Communications

Poor engineering-management communications are robbing companies of 60% of engineers' potential managerial talent, National Society of Professional Engineers' survey* reveals.

How to stop this waste: (1) Assess present communications. (2) Revamp program to your needs using group meetings, management letters, bulletin boards, special publications.

Usual line of communications in large companies is inverted "Y"; in small companies and departments, circular pattern. Program should fit your set-up, permit flow up as well as down.

Making maximum use of available personnel is one obvious solution to the technical manpower shortage that can be adopted immediately. That means drawing on the training and experience of engineers and chemists in making management decisions, keeping that talent pool informed of management's immediate aims and long-range plans so reliable, pertinent information continually filters up.

How well are companies doing this? "Not well enough—by a long shot," is the conclusion of the National Society of Professional Engineers which has just completed a survey on engineering-management communications. Results show that 60% of potential managerial skills of engineers are being wasted because the lines of communications are fouled up, or are inadequate.

In making the survey, NSPE polled more than 350 firms in all industries employing engineers. The chemical process industries are well represented with about 50 organizations replying. Participants in the survey have more

than 2 million employees (ranging from 20 to 200,000 per firm) of whom 45,000 are engineers; operate more than 1,000 plants (from 1-200 per company); call the man with the top engineering job chief engineer.

Plug or Open Valve: This chief engineer is the key figure in transmission of information between management and engineering staffs. He participates to the greatest extent in company operations; and although project engineers also have prominent roles in engineering matters, new products and processes and purchasing, engineering staffs in general have little to do with planning.

Most engineering staffs are organized on the pyramid or inverted "Y" basis with this principal participant—chief engineer—at the key point in communications. He is the man who can make communications click, broaden the base of participation of his staff. Apparently in too many firms he is not aware of his responsibilities in this respect, is more of a plug than an ever-open valve.

Not all companies, however, have this hierarchic form of communications. Smaller firms, in particular, or

departments within larger organizations, often have the "circular" set-up (see cut) in which there is broad participation and exchange of ideas. The latter system has been shown to be less efficient, but participants are "happier," more adaptable to change. In improving communications, companies obviously must take into consideration the method they use or want to use.

Best Tools: These are the marks of a good communications program as reported by industry in the poll:

- **Group Meetings.** Include panel meetings, conferences, clinics and seminars. Are most valuable when company president, top management men show up. Good topics for presentation and discussion: expansion, new products, sales and advertising, production and engineering plans, benefit systems, industry trends.

- **Management Letters.** Mail to employees' homes preferably. Should be personalized, include news letters and special-purpose letters. Best when signed by president or other top men.

- **Bulletin Boards:** Not to be used for announcements needing further explanation. Good for current advertising, publicity displays, annual sales figures, etc. in addition to routine notices.

- **Special Publications:** Company-sponsored engineering magazines for internal (and external) use where staffs are large. Where staffs are small and scattered, engineering sections in house organ. indoctrination bulletins explaining engineering department organization and lines of communication.

Self-Dissatisfaction: A good number of firms should be bent on a communications overhaul, for although 88% want opinions and suggestions of en-

* *How to Improve Engineering-Management Communications*, available after March 17 from the Society, 1121 15th St., N.W., Washington 5, D.C., at \$1 to members, \$2 to non-members.

gineers, only 55% are satisfied with their present methods of obtaining them. Most of them rely on conferences, meetings, interviews and surveys to hear from engineering employees; few depend on suggestion boxes, indicating a perhaps unwarranted assumption that engineers will come forward when they have something valuable to say to higher authority.

NSPE puts the responsibility at management's door, says it's the brass' job to stimulate engineers to think about overall company problems by meeting with them personally, discussing company affairs in detail.

In exploring the kinds of information for which engineers ask, the survey turned up the not astonishing fact that technical employees—like all other workers—want to get ahead, want the company to prosper. Relatively few engineers, however, evince an interest in sales or financial matters. This indicates a big weakness in management's explaining how vital such factors are in company planning, and how necessary it is for managerial timber to know something of these aspects of the business.

And paradoxically, many companies with no provision for keeping engineers informed on over-all management problems, expect this group to show interest. Others, however, are keenly aware of the need for passing the word down. To accomplish this, they use line-of-supervision (through the key man in the "Y") transmission, personal talks by executives, and conferences. Other successful—and enthusiastically endorsed—methods of bringing management and engineers closer are newsletters, seminars, and special publications.

Keeping engineers aware of the opportunities in the company is not well organized either, for few companies have specific methods for this. Such a lack is, of course, not so important in the chemical process industries as in others, for technical men are generally considered potential management material. But as NSPE points out, those companies with regular follow-ups to good introductory training programs develop the best engineer-executives.

Self-Appraisal: In its report on the survey, NSPE points out that where communications are good, the program has the active support of top management. The Society also reviews the experience of a leading U.S. firm* in investigating why ideas didn't

* Not identified by name, but to students of industrial communications, obviously Johnson & Johnson of New Brunswick, N.J.

flow up as easily as orders flowed down. The company found that the main barrier to the upflow was management itself; the brass couldn't be convinced that getting information from lower echelons was a problem. Management felt that no news was good news; resented criticism; tried to dodge personal problems of subordinates; often failed to heed information or to act on unhappy situations. But the problem is half won, it was found, when management recognizes its responsibility for poor communications, its duty to improve them.

NSPE agrees, offers these suggestions for improving engineering-management communications:

- Conduct an "engineering audit." This should reveal how engineers (or any group surveyed) feel about their present communications with management. It should be conducted on the basis of individual interviews if possible, and by the company industrial relations department or an outside opinion researcher if a large number is involved. A series of questions (18 are given in the report) on whether a man feels he is part of management, what kind of information he would like to have, whether he considers that management is informing him adequately about his industry and the company's place in it, etc., will reveal the state of morale, the effectiveness of the communications system.

- Review present communications

set-up. With audit as a guide, present methods and media should be tested. Out of this will come techniques that can build both better communications and better all-around human relations.

- Put top man in charge. Responsibility for effective communications should rest on one man, and he should be the top engineering executive. For his stake in his staff's contributions to the company is greatest.

EXPANSION. . . .

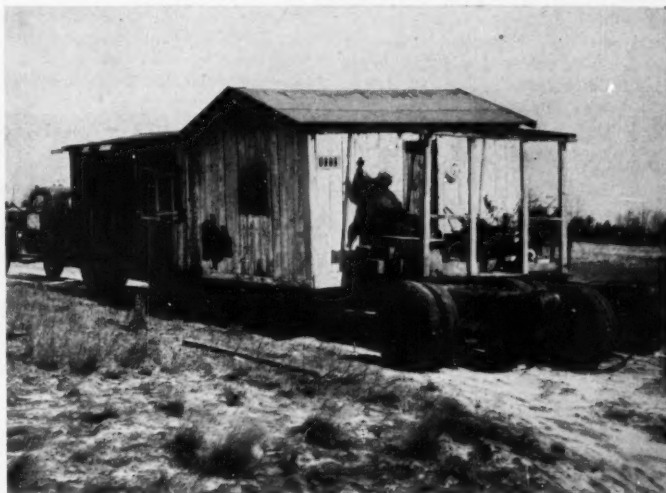
Petrochemicals: A quartet of new developments highlighted the petroleum-based chemical field this week:

- Eastern States Petroleum in the last fortnight has put a 7,000 bbl/day platforming unit into operation at Houston. Also onstream: a new Udex unit which will turn out 500 bbls. daily of aromatic solvents. The company is also planning \$4 millions' worth of facilities to produce ethylene at Houston.

- Imperial Oil will spend \$7 million modernizing its Regina, Sask., refinery. A major feature: 7,500 bbl/day fluid cat cracker.

- Mathieson's Doe Run, Ky., facilities for ethylene oxide and glycol production are inching towards capacity. Onstream for several months: the plant's liquefied petroleum gas facilities.

- Esso Standard Oil will spend \$16 million in addition to an earlier \$35 million in expanding its Baton Rouge,



Making Way for H-Bomb Plant

ONE OF ELLENTON, S.C., RESIDENTS dispossessed to clear the area for H-bomb plant construction, Hattie Badger waves from porch of her small farm shack as it is moved elsewhere. Some 315 square miles were evacuated earlier this month; Ellenton's 600 people are gone, and 50 of their 150 houses relocated.

La., refinery. Units now under construction will increase output of butadiene, synthetic alcohols and will facilitate benzene production. The further extension will include new distillation units and expansion of fluid cat cracking facilities.

Hydrogenated Vegetable Oils: Canada Packers Ltd. is slated to begin operation this month at its vegetable oil hydrogenation plant in Winnipeg, Man.

Wood Pulp: Buckeye Cellulose Corp. has begun construction of \$20 millions, worth of nitrating and dissolving wood pulp manufacturing facilities at Foley, Fla. Completion is slated for the fall of 1953; capacity will be about 100,000 tons of pulp.

Sulfur, Sulfuric: Phillips Chemical has begun operation of sulfur extraction facilities near Goldsmith, in West Texas. Slightly over 120 tons a day of sulfur will be recovered from natural gas. The sulfur will be trucked to Fort Worth and converted to acid for subsequent production of ammonium sulfate at Houston. A second plant is under construction in Crane County.

• Garfield Chemical and Manufacturing, subsidiary of American Smelting & Refining and Kennecott Copper, is expanding its Garfield, Utah, acid plant. Present plant cost \$7 million and produces 450 tons of acid per day. Expansion will cost \$2.5 million and will add 250 tons/day to the output.

KEY CHANGES . . .

William J. Welch: To director, National Lead Co.

Emil H. Balz: To director of research, Glass Fibers, Inc.

E. C. Kleiderer: To executive director of development, Eli Lilly & Co.

W. J. Rice: To executive director of control, Eli Lilly & Co.

Howard O. McMahon: To science director, Arthur D. Little, Inc.

James E. Seebold: From director, process division, to assistant manager of research, Standard Oil Co. (Indiana).

Ernest W. Reid: To director, Commercial Solvents Corp. He is president of Corn Products Refining Co.

Donald L. Taylor: To manager of general developments, development

and research dept., Hooker Electrochemical Co.

Robert Strasser: To executive vice president, Stein, Hall & Co., Inc.

Andrew L. Smith: To heavy chemicals sales manager, Merrimac Div., Monsanto Chemical Co.

J. M. Thomas: To sales manager, resins and chemicals div., Jones-Dabney Co.

Norman S. Mount: From advertising and technical sales manager, Ohio-Apex, Inc., to National Production Administration.

Resinous Cornerstone

New facilities went into operation early this month at Laurel Hill, Long Island, N.Y., tripling Kenrich Corp.'s capacity for some novel aromatic hydrocarbon polymers. Present uses are as plasticizers and processing aids in plastics molding.

Concurrent with the expansion came two other changes for the company: (1) Black ink replaced red in the ledger balances. (2) Physical integration was completed, as company offices moved from Wall Street to Laurel Hill.

The resins, key to the up-to-this-point progress of Kenrich, are methylene-bis aromatic polymers—aryl counterparts of the polybutenes. The high aromaticity and the presence of activated methylene groups in the resins give them properties different enough to lead to yearly production and sales approaching seven figures.

Raw materials for the resins—mar-

keted under the name Kenflex—are paraformaldehyde and aromatic petroleum fractions. Present production utilizes dimethyl naphthalene and trimethyl benzene. Any coal- or petroleum-based aromatic can be used.

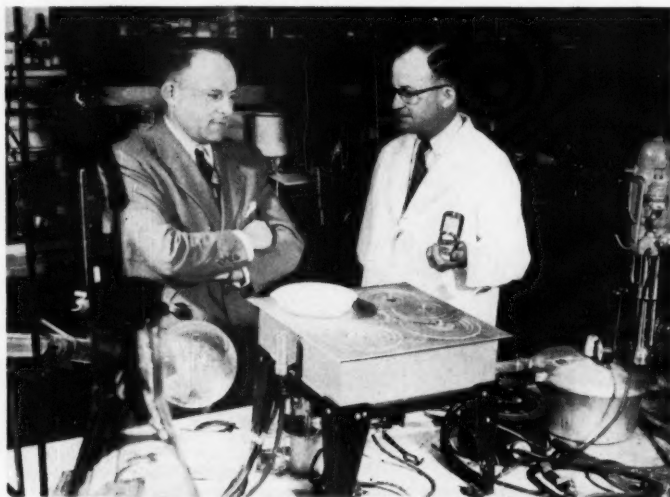
End products, of course, vary with the starting material. If phenol is used, for example, the resin exhibits fungicidal and anti-oxidant properties. This is due to the free hydroxyl groups it carries, since the polymerization occurs primarily through the aromatic ring.

Brain Father: First of two corporate guiding lights is Paul M. Goodloe, whose full-time occupation is that of technical sales representative for the Brown Co. His interest in the resins stems from ten years spent as research chemist and technical service supervisor for Socony-Vacuum, where the original research was carried out.

The polymers started their long trek towards commercialization when Goodloe and some friends banded together, pooling their savings and incorporating as Kenrich.*

Following incorporation in 1947, they optioned Socony-Vacuum patents and, in their spare time, erected a pilot plant and began development work. Opportunities seemed promising enough to warrant construction of a semi-works plant, but here their savings ran out. They obtained the capital needed from the Holloway Corp., makers of specialty sugar products, but because of the still-speculative aspects of the venture, 51% of Kenrich stock went to the Holloway interests.

* From Richmond, Kentucky, earlier stamping ground of Goodloe and fellow director Edgar Higgins.



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Jackson 3531

BALTIMORE, MD.
Ploza 3932

BOISE, IDAHO
Boise 4182

BOSTON, MASS.
Charlestown 2-1140

BUFFALO, N. Y.
Madison 5-300

CHARLOTTE, N. C.
Charlotte 2-7191

CHICAGO, ILL.
Lincoln 9-7121

CINCINNATI, O.
Main 4254

CLEVELAND, O.
Cherry 1-2693

DALLAS, TEX.
Randolph 4830

DETROIT, MICH.
Lorain 7-2414

GREENSBORO, N. C.
Charlotte 3-6635

LOS ANGELES, CAL.
Logan 5-7437

LOUISVILLE, KY.
Wabash 7013

MILWAUKEE, WIS.
Uptown 3-2500

NEW ORLEANS, LA.
Canal 6117

NEW YORK, N. Y.
Plaza 9-8164

PHILADELPHIA, PA.
Rittenhouse 6-5931

PORTLAND, ORE.
Capitol 1721

ST. LOUIS, MO.
Main 8282

ST. PAUL, MINN.
Prior 5537

SAN FRANCISCO, CAL.
Exbrook 2-1611

SEATTLE, WASH.
Seneca 5050

SPOKANE, WASH.
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March 15, 1952 • Chemical Week

19

Brain Trust: From this point, Kenrich's growth has been masterminded by John Ware, who joined Holloway at about the time it gained an interest in Kenrich. Ware, a Columbia engineering graduate formerly with National Sugar and more recently General Mills VP in Brazil, directed Kenrich plant construction and fathered process improvements which made possible continuous operation.

The resins caught on, finding increasing use either as a processing aid or as a plasticizer in molding polyethylene, polystyrene, polyvinyls, Vistanex, Thiokol, Kel-F, natural and synthetic rubbers and some polyesters. Primary uses: in vinyl insulation, records, and plastisols and in electric potting compounds.

Demand for the products made further expansion desirable, but lack of capital once more put a crimp in plans. Those approached for money demanded, as usual, voting control; so negotiations broke down.

Meanwhile longer shifts were started to meet demands, and finally sales increased to the point where it was possible to expand capacity without resorting to outside capital. Here waiting paid off.

Brain Children: Specific uses for the resins are varied and often confidential, but Goodloe and Ware have estimated a potential demand of 70 million pounds per year. Such sales—which are still well in the future—would allow significant price cuts.

Right now, Kenrich's progress is tied to resins already in production. The company's schedule is necessarily deliberate, but the deliberation is tempered by the market possibilities in new resins with further new properties.

Gas Wrangle

Showdown time in the international struggle for Alberta's natural gas was extended recently to give the provincial government time to make its decision on gas export permits.

New deadline for cancellation of present natural gas contracts between Canadian producers, the Northwest Natural Gas Co., and American distributors in Seattle and Portland, is May 15. By April the Alberta government will have made its decision.

As originally drawn, the contracts would have been voided on Feb. 15 unless Alberta had granted an export

permit to Northwest Natural Gas Co. by that date. The extension continues the "inside track" that Northwest holds in competition among pipeline companies seeking permits to export the natural gas from Alberta.

High Levels: Executives of Pacific Northwest Pipeline Corp., rival of Northwest Natural Gas in seeking an export permit, have completed conferences with government officials in Ottawa and Washington, D.C. They expect the ultimate decision on natural gas to be made "at the highest government levels."

Although the Alberta government controls the export of gas through its Petroleum and Natural Gas Conservation Board, pipeline firms cannot go ahead without approval of the U.S. Federal Power Commission for construction of lines through U.S. territory.

International Prize: Not only are there four other American firms competing for export permits, making a total of six, but Canadian companies seeking to transmit the gas East are in competition with all the pipeline companies which want to bring it West.

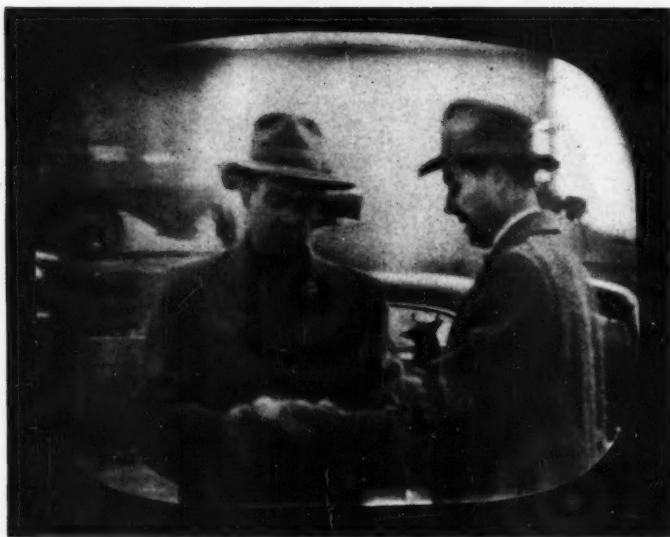
Ray C. Fish, chairman of the board of Pacific Northwest Pipeline, has proposed a solution of the East-West struggle that is now being considered. The proposal is a reciprocal plan under which his company would take 250 million cu. ft. of gas daily from Alberta for use in the Pacific Northwest and British Columbia, and Eastern Canada would receive a like amount of Texas gas by extending an existing Texas-Detroit pipeline to Ontario and Quebec.

For decisions in this latest round of Alberta gas and oil squabbling, potential customers will now have to wait until May 15.

LEGAL

Anti-Ichthyocide Bill: Sportsmen and ichthyologists are pleased with the new anti-stream-pollution bill now in the Virginia legislature, but industry in the state is not so happy. Reason: The bill provides for fines of \$2,000 to \$5,000 if fish are killed in Virginia's streams as a result of pollution in excess of that allowed by the Water Control Board.

Strangely enough, industry men are not registering the same violent protest they did to an earlier, stronger version of the bill. Instead, S. H. Williams of American Cyanamid says they are waiting "to see how it fits into the scheme of the water control system." Anent the earlier law, Williams said it would leave industry



Stockholders TV-Tour Foote Plant

TELEVISION PLANT TOURS for stockholders bowed in as a management technique at Foote Mineral Co.'s recent annual meeting.* Some 200 shareholders sat in the company's Exton, Pa., plant cafeteria, saw their investments at work by means of a closed TV circuit employing 4 cameras and 12 receivers. Company employees—above, ad manager Bob Drake showing piece of lithium-bearing ore—explained lithium operations, zirconium process, applications of Foote's various mineral products.

* Reminiscent of Dow Chemical's stockholders' meeting last year; meeting place was too small to accommodate all, so TV was used to beam proceedings to the overflow crowd in another building.



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Catalog 400 replaces our old Catalog 200. Its 180 pages illustrate and describe each model in the complete line of Cleveland Worm Gear Speed Reducers. It contains engineering data on each type, including dimensions, weights and horsepower capacities—all the information you need to arrive at proper selections of drives for any equipment.

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The Cleveland Worm and Gear Co., 3291 East 80th Street, Cleveland 4, Ohio.

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CLEVELAND
Worm Gear
Speed Reducers

"only one alternative—to close the plant and quit business."

But Ernest Robinson, sponsor of the bill, is going ahead to "stop the killing of tons of fish in our rivers."

Gas is Gas: Natural gas is gas—not petroleum; and rights reserved for the latter do not include the former unless the two are mixed under the earth. That is the decision of the Court of Appeal, Alberta, Can., in a test case involving the Canadian Pacific Railway and the Imperial Oil Co.

The railway had contended that oil rights it reserved to itself when selling its land in Alberta to farmers in the early 1900's included natural gas. The court disagreed, but also denied the farmer's claim that the company be enjoined from removing its oil because it was wasting his gas. CPR now has the go-ahead to take its oil regardless of the gas it wastes in the process.

Upshot is that the railway lost on principle but won its oil.

More Certificates

Space limitations last week precluded publishing all of the certificates of necessity granted since August by the Defense Production Administration to firms in the chemical process industries. The accompanying list, therefore, should be appended to last week's classified breakdown.

Wages And Hours

Chemical and allied industries have done a good job of complying with the provisions of the amended Federal Wage and Hour Law, but there is considerable room for improvement. This is the essence of recently released figures on the law's first full year of operation.

According to the annual report for 1951, 41% of the plants investigated in the chemical and allied industries were found to have violated the act's minimum wage, overtime pay or child labor provisions. This is not as bad as it sounds, however, since the Wage and Hour Division only investigates when it has reason to believe violations exist. Even in the case of violators, the Division feels that most break the law more from ignorance than from wilful intent.

Expensive Violations: The report shows that a total of \$117,333 in back wages was paid to employees in the chemical industry as a result of violations of the act. And this does not include amounts awarded by courts to employees who sued under the law

SULFUR, SULFURIC ACID, SULFUR COMPOUNDS

Company and Location	Product	Amount Applied for	Amount Certified	%
Allied Chemical & Dye Corp., East St. Louis, Ill.	Sulfuric acid	1,627,000	1,627,000	70
Anaconda Copper Mining Co., Alpine County, Calif.	Sulfuric acid	1,825,000	1,550,000	70
Humble Oil & Refining Co., Baytown, Tex.	Sulfuric acid	608,000	588,000	70
Gulf Oil Corp., Crane County, Tex.	Sulfur	200,000	200,000	70
The Pure Oil Co., Toledo, O.	Sulfuric acid	2,560,000	2,478,000	90
Consolidated Chemical Industries, Inc., Baton Rouge, La.	Sulfuric acid	3,000,000	3,000,000	70
Stauffer Chemical Co., Monongahela, Pa.	Carbon bisulfide	—	—	50
Filtrol Corp., Salt Lake City, Utah	Reclaimed sulfuric acid	119,935	119,935	70
General Petroleum Corp., Worland, Wyo.	Sulfur & process plant	4,220,000	1,259,000	70
			528,000	40
			2,433,000	65

MISCELLANEOUS

Company and Location	Product	Amount Applied for	Amount Certified	%
The C. P. Hall Co. of Ill., Chicago, Ill.	Dicarboxylic acid	—	—	60
Koppers Co., Warren Twp., O.	Pitch coke	—	—	60
Groveton Papers Co., Groveton, N. H.	Sulfite pulp	—	—	60
Allied Chemical & Dye Corp., Marcus Hook, Pa.	Insecticides	—	—	50
Union Carbide & Carbon Corp., Ashtabula, O.	Ferrosilicon	—	—	75
Dow Chemical Co., Midland, Mich.	Chemical products	—	—	50
Dow Chemical Co., Midland, Mich.	Various products	—	—	50
Allied Chemical & Dye Corp., South Point, O.	Urea	—	—	50
Dow Chemical Co., Freeport, Tex.	Caustic soda	—	—	50
Malyern Brick and Tile Co., Malyern, Ark.	Refractories	—	—	85
E. I. du Pont de Nemours & Co., LaPorte, Tex.	Fungicides	—	—	50
Dow Chemical Co., Freeport, Tex.	Glycols, magnesium metal, styrene	—	—	50
Pittsburgh Coke & Chemical Co., Neville Island, Pa.	Generator steam, electric power	1,836,000	1,836,000	60
Union Carbide & Carbon Corp., South Charleston, W. Va.	Tri-2-ethylhexyl phosphate	686,000	686,000	70
Parker Bros. & Co., Inc., Galveston, Tex.	Chemicals	—	—	25
Filtrol Corp., Jackson, Miss.	Filtrol desiccant	131,605	131,605	60
Charles Taylor Sons Co., Taylor, Ky.	Synthetic mullite	45,500	45,500	65
		49,000	49,000	65
Kaiser Aluminum & Chemical Corp., Spokane, Wash.	Cryolite	456,000	456,000	70
Norton Co., Worcester, Mass.	Silicon carbide grain	659,565	653,895	65
Minnesota Mining & Mfg. Co., St. Paul, Minn.	Abrasive products	6,367,850	6,367,850	65
Food Machinery and Chemical Corp., New York	Soda ash	14,379,000	13,737,450	30
Pennsylvania Salt Mfg. Co., Natrona, Pa.	Kryolith	158,570	158,570	70
The Davison Chemical Corp., Baltimore, Md.	Petroleum catalyst	210,494	210,494	75
Aluminum Co. of America, Alcoa, Tenn.	Cryolite	203,600	203,600	70
Allied Chemical & Dye Corp., Chicago, Ill.	Coal tar chemicals	11,400,000	10,650,000	60
Allied Chemical & Dye Corp., Erie City, N. Y.	Aniline oil for synthetic rubber	2,307,300	2,307,300	60
General Electric Co., Waterford, N. Y.	Silicone products	4,506,000	4,506,000	60
Allied Chemical & Dye Corp., North Claymont, Del.	Hydrofluoric acid	402,088	402,088	65
Mullite Mfg., Inc., near Eufala, Ala.	Synthetic mullite	543,129	518,120	65
Dow Corning Corp., Midland, Mich.	Silicone products	10,997,000	10,194,000	60
Pennsylvania Salt Mfg. Co., Calvert City, Ky.	Hydrofluoric acid	320,000	320,000	65
Nox-Rust Chemical Co., Stickney, Ill.	Rust preventives	442,158	254,562	20
			176,087	60
The Carborundum Co., Vancouver, Wash.	Silicon carbide	3,319,248	3,319,248	65
Allied Chemical & Dye Corp., Philadelphia, Pa.	Nicotinic acid	442,200	442,200	65
Universal Oil Products Co. of Louisiana, Inc., Mooringsport, La.	Synthetic cracking catalyst	2,000,000	1,555,100	75
			384,300	50
			60,600	15



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for back pay and liquidated damages.

A somewhat surprising 5% of those investigated had failed to pay the minimum wage of 75 cents an hour, even though the great majority knew of the raise in this minimum.

Most common violations were those breaking the overtime pay rules. No less than 38% of the companies investigated were guilty of this. Apparently many employers in the chemical industry have forgotten that time-and-a-half is paid for work over 40 hours in the week unless the Act specifically provides otherwise.

Failure to comply with the Act's child labor provisions was found in only 2% of the cases investigated.

Anticipating Unions

With both AFL and CIO chemical unions readying major drives for more men and more benefits in 1952, the chemical industry is going to have to do some shrewd anticipating of union demands if it is to deal successfully with its labor force and labor costs. That there is room for improvement in crystal-balling the unions in the chemical industry is obvious from current bargaining trends within the industry. At least that's the word from Austin M. Fisher, of Fisher & Rudge, New York industrial relations consultants, interviewed by **CHEMICAL WEEK**.

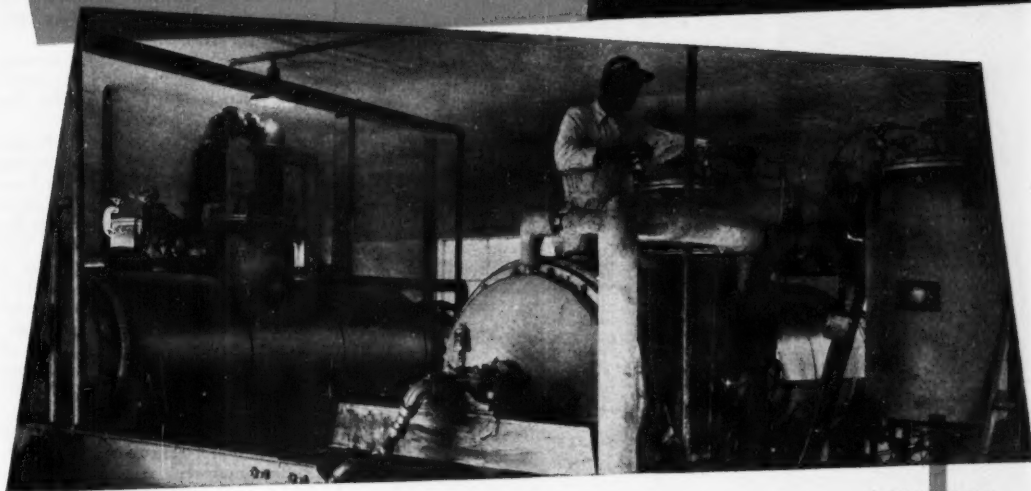
Cloak and Dagger: The best way to arrive at future costs of labor, and future union lines of attack, is to find out far in advance what the union will demand at the renewal or reopening of the contract. One way to do this, and probably the best way, is to analyze all new contracts made by the same union with other employers.

The comparison of all demands with conditions in its own plant should enable a company to anticipate fairly accurately just what its own local is going to want. For example, Fisher pointed out that if the union has made vacation demands based on length of service, and the company has a large percentage of workers with long service, a vacation demand is almost sure to come.

It is equally important to keep an eye on the prevailing wage level in the plant community. By selecting jobs common to many plants in different industries, a company can determine where it stands in the area scale.

A third major factor today is watching Washington for decisions and pronouncements from the Wage and Salary Stabilization Boards. The Government is in labor relations to stay, and companies that don't keep an eye on developments are going to have trouble. If WSB has given one caustic producer's workers 15¢ an hour increase, and you make caustic, you

Keep it out of the air... Process in Vacuum



Installation of Stokes Rotary Vacuum Dryers used by Mills Disintegrating Co., Berkeley, Cal., for drying of aluminum powder.

Many powdery oxidizable materials, such as aluminum when dried in powdered form, tend to ignite in the presence of air and burn with explosive effect.

Many heat-sensitive chemicals suffer serious impairment of their properties when dried under atmospheric conditions.

Many products, such as blood plasma, are completely deprived of their original values through atmospheric drying.

In contrast, these same materials, when dried under vacuum, are free from fire and explosion hazards, free from chemical change and deterioration; and, as a bonus, valuable solvents are fully recoverable.

Vacuum drying can be done at temperatures well below 100°F., causing rapid elimination of excess moisture, without affecting the chemical properties of the product. Drying speed is increased; drying time and overhead are reduced.

Finished products have low and uniform moisture content. Valuable solvents are easily recovered at 99% efficiency, or better.

A new 24-page brochure, just off the press, entitled "Vacuum Drying," explains the wide range of processes and equipment by which chemicals are dried under vacuum. Many typical vacuum drying problems and their solutions are included.

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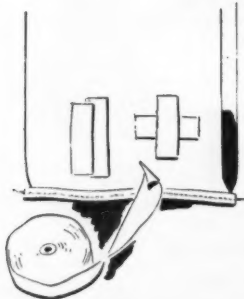
Use of Hand Trucks . . . Trucks (and chutes and conveyors) should be free of protruding nails, splinters, etc.

Two-wheel trucks should have wide, extended lips, as narrow-blade lips cut into the sacks. Wood or metal lip extensions may be added. Sacks should be piled flat. Small wooden pallets may be used if the truck lip is adequate.

On four-wheel trucks, sacks should be stacked flat and even with the truck edges, with the end sacks interlocked.



How to Lift and Carry . . . One man should pick up the sack with his hands underneath it, preferably at diagonal corners. Two men should lift the sack with the hands underneath it, supporting the four corners. Never grip or pull at the corners. Never drag the sack across the floor. Never, with a tied closure, pull at the closed end. Carry the sack with the edge resting against the body, or flat on the shoulder.



How to Repair or Overslip Damaged Bags

If seriously damaged, slip an overslip over the damaged bag (with contents intact), then close with a wire-tie or string, or roll the top and staple it.

If the damage is minor, or an overslip is not available: **1.** Straighten paper near the tear; place torn ply, or plies, in original position; clean off any loose material or dirt. **2.** Apply moistened gummed tape, cut 4 or 5 inches longer than the tear. Use single, overlapping or crossed patches, depending on size and kind of tear. **3.** If more than one ply is severely ruptured, patch each ply separately.

A 3-inch, 40-lb. or 50-lb. gummed kraft tape is satisfactory. Carry repaired bags with the patched side up.

Want the Whole Story? Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

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won't get far offering 10¢ an hour. The unions are all eyes and ears today, complete with lawyers and economists who know their jobs, and companies must follow suit.

The Record: At CW's request Fisher made a spot check of 53 new contracts in the chemical industry. The results showed some interesting, and expensive, trends.

All 53 contained hourly increases ranging up to 15¢, and 36 had cost-of-living clauses. "Fringe" benefits ran the gamut—and ran amok.

Ten of these contracts allowed "funeral pay" provisions under which an employee is paid when absent from work due to death in the immediate family. A strong trend toward the liberalization of vacation plans was noted. Group insurance, additional paid holidays—in some cases at double-and-a-half pay—meal allowances after ten hours' work, pay for jury duty, and hospitalization are only some of the "fringes" written into new contracts.

Combine these "direct" cost demands with such union favorites as the union shop, check-off, job classification, and seniority rights, which don't cost directly but strengthen the union and cost indirectly, and companies are faced with a rapidly widening range of labor costs.

The days are gone now when a company could take its basic wage



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LELAND I. DOAN, Dow Chemical president, accompanies the company's male chorus. Music is a keystone in Dow's employee and community relations: There is a Music Building at Midland, Mich., and a professional music director in charge of the program which includes a male chorus, girls' chorus, symphony orchestra, string quartets, madrigal singers and brass and woodwind groups.

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ACID CLEANERS Whether you use phosphoric, hydroxyacetic, gluconic, lactic or citric acid in your milkstone remover—be sure to include ULTRAWET 30 DS in your formulated cleaner. The ULTRAWET 30 DS—or ULTRAWET DS if you prefer a flake instead of the liquid—shows the greatest compatibility with these acids, and speeds up penetration. That means a faster, better job done at a lower cost to you.

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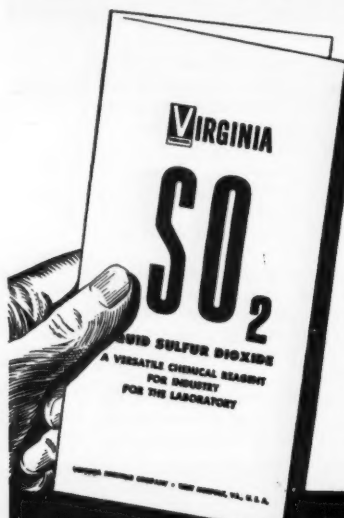
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Chlorine is indispensable for the purification of municipal water supplies. Sometimes the complex problems encountered in delivering safe and palatable water create the need for an effective dechlor to control the final chlorine content of the water as it enters the mains.

Many of the country's important municipalities make routine use of "Virginia" Liquid Sulfur Dioxide ("Esotoo") in their treating plants. They have found that the relative ease with which 99.98+ percent pure SO_2 can be controlled as a dechlor makes it no problem to have palatable water.

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rate and quickly estimate its labor costs for the coming year. Nowadays, with a myriad indirect labor costs, with premium and shift pay, and with escalator clauses and WSB rulings, the basic wage scale doesn't seem to mean very much at all.

LABOR

Textile Fracas: The strike at Hayward-Schuster's East Douglas, Mass., mill is the first in what may well be a wave of strikes throughout the woolen and worsted industry.

Reason given by the Textile Workers (CIO) is company refusal to grant an escalator cost-of-living clause. The Textile Workers are bucking a demand by American Woolen Co. that they leave the clause out of new contracts with that company.

At the same time 200 workers have been laid off in H & B American Machine Co.'s Providence, R.I., plant. Reason: poor conditions in the textile field.

U. S. Rubber at Providence will also have to lay off a similar number of men unless there is an improvement in its textile line.

Wage Increase: Wage increases ranging from 15¢ to 24¢ an hour are in the new contract between Dominion Tar and Chemical Co., Cornwall, Ont., and the International Chemical Workers (AFL). The basic wage rate is now \$1.17 per hour.

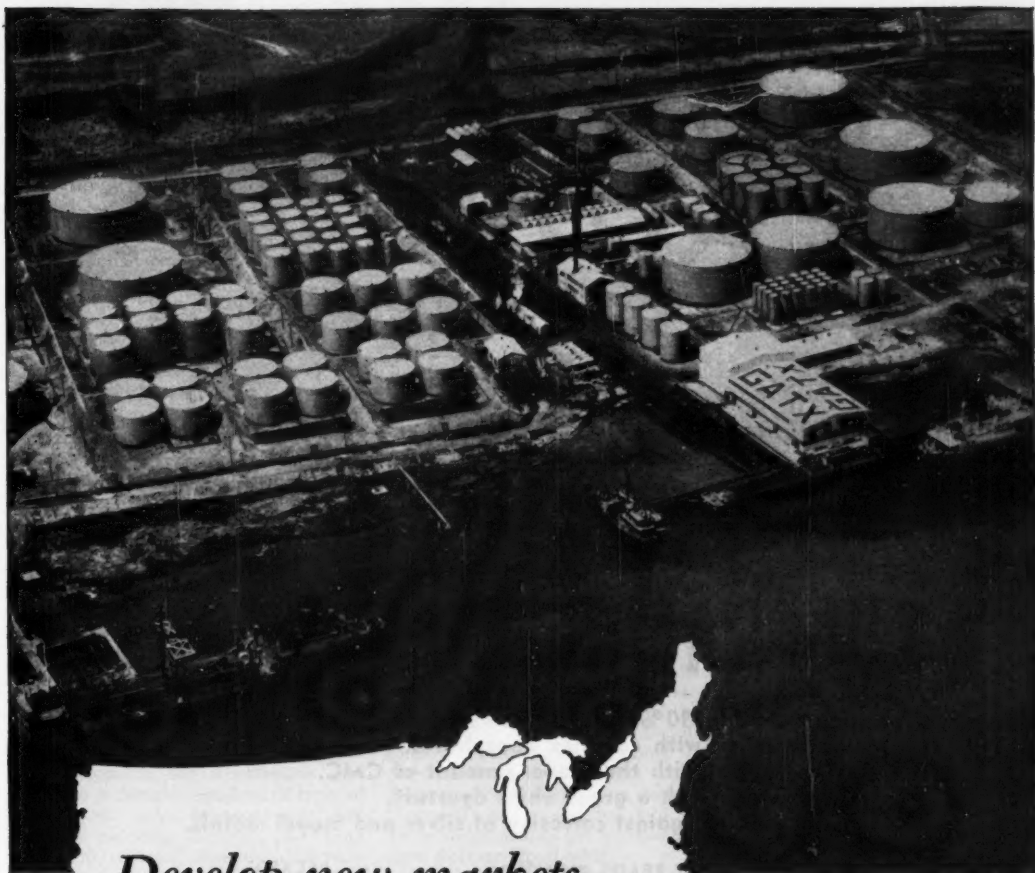
Strike Averted: A threatened strike at the Linde Air Products Co.'s Oxygen & Acetylene Division plant at Buffalo was averted when members of the International Chemical Workers (AFL) ratified a two-year agreement calling for a wage increase and many fringe benefits.

Election Set Aside: Results of a bargaining election last year at the Edgewater plant of the National Carbon Co., lost by the Gas, Coke & Chemical Workers (CIO), have been set aside by NLRB.

The regional director for NLRB ruled that the company sought to influence the results by raising pay in a department prior to the election. The union had lost to "no union" by four votes out of 1,200 employees. The company has filed exceptions to the director's ruling.

NLRB can hold a hearing, or order a new election without hearing.

Atlas Powder: A 6¢-an-hour increase is main feature of the new contract between Atlas Powder Co.'s Richmond, Calif., plant and the Mine-Mill local.



(Aerial view of Carteret, N.J.)

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DISTRIBUTION

Equipment Group Grows

The Chemical Equipment Sales Engineers Association, formed in September of last year by New York sales engineers out to give their profession a focus, has already stirred interest in other cities.

Du Pont assistant division purchasing agent Harold F. Jones keynotes latest monthly meeting with requirements, merits and demerits of equipment salesmen.

No plans for national organization are underway as yet, but Kenneth S. Valentine, president, looks for it in not-too-distant future.

Last week's regular monthly meeting of the Chemical Equipment Sales Engineers Association was both typical of the hustling newcomer, and an occasion of out-of-the-ordinary importance. Milestone: Philadelphia co-workers are ready to form their own group and looking to the New York pioneer for aid.

Typical of the association's lively meetings was the talk by "Hack" Jones outlining his provocative thesis of the "Five Noses" for good sales engineers.* Jones followed such speakers as S. B. Roberts, chief engineer of Celanese, in the Association's program to bring as speakers all types of men the sales engineer must deal with, including engineers, purchasing agents, technical directors, plant managers, research and development men, and production heads.

Focus: Listening to speakers and thrashing out problems is only one aspect of the C.E.S.E.A. More important is giving sales engineers of equipment a point of professional focus. Chemical salesmen have the Salesmen's Association of the Chemical Industry; engineers have the American Institute of Chemical Engineers; but the men who are part salesman and part engineer, and who sell not chemicals but equipment to make chemicals, had nowhere to go.

As pointed out by Jones, "The marketing of capital equipment presents specific problems not met elsewhere in commodity sales." In addition all professions need a standard set of ethics, a nucleus around which to build a professional standard with teeth in it. "When there is a strong organization, there is less chance for the rare unethical individual to profit, since he knows he will be expelled if caught and the spotlight put on him."

* A sales engineer is defined by Valentine as a man with an engineering degree, or whose training is primarily in engineering, and who is selling machinery or equipment.

Finally, the chance to get together and help promote better relations between customers and sellers, and between seller and seller, made it all but inevitable that the C.E.S.E.A. would be formed. Now that it is formed and functioning with such success, other areas are looking to New York for aid and inspiration.

Philadelphia Next? Most active interest so far has come from Philadelphia. The New York group has been approached by sales engineers of that area wanting to join. But Valentine feels that local groups should be maintained rather than letting the organization become merely a national "fraternal" group, and has told the Philadelphia men to get together and form their own local outfit.

Valentine sees the role of the New York advance guard group as one of counselling over pitfalls already encountered and overcome. Although no actual plans have been made to do anything actively about going national, Valentine indicated that he favored a coordinated local chapter form of organization, all following the same rules, with the same aims, but strictly autonomous. This way the Association would have the advantages of both standard central rules, and local self-government—a type of federal "checks-and-balances" organization.

Five Noses: That the new group is not a social tea club or a mutual admiration society was graphically illustrated by Jones's talk on the "five noses" needed by sales engineers. In the talk, their shortcomings were made as evident as strong points, if not more so. As a purchasing agent, Jones pulled few punches, hitting squarely on his "five noses."

• A good sales engineer has a "nose" for business. He doesn't waltz in just "looking" but comes to the point, and lets the purchasing agent



JONES: Five "noses" to sell equipment.

know he knows there is business on hand.

• He "knows" his product. Too many salesmen show up at a potential customer's office ignorant of the rudiments of their equipment.

• "Knows" his company. If a salesman has to hem and haw about who in his company does what, what his company can and can't do, and what his company's policy is about a certain practice, he will be a bust. If he has to send "home" for instructions he'll get no respect either.

• "Knows" his customer. This means right down from the purchasing agent to the machine operator. The sales engineer has to get around, and not tarry with the purchasing agent if he wants to sell equipment.



VALENTINE: A focus for a set of standards.

HUDSON MULTI-WALL SACKS

PASTED AND SEWN—VALVE AND OPEN MOUTH

MEASURE UP TO YOUR MOST EXACTING SPECIFICATIONS

Hudson is able to deliver multi-wall sacks that live up to the letter of your specifications... *every time*. Here are the reasons:

- 1 Hudson has control over all the basic ingredients. Every step in manufacture—from the timber reserves to the finished sack—is under one ownership and management.
- 2 The Hudson mill is new. Here the most modern equipment that can be built turns out your sacks under regulated temperature and humidity. Electronic controls give a new meaning to the word "exact."
- 3 Tests, inspections, and double checks follow your sacks through the mill, with a relentless vigil.
- 4 Hudson is a veteran of 30 years of experience in the kraft field. The company understands your problems in packaging and knows why your specifications are *important*.

Order from Hudson, and be sure of sacks *when* you want them—the way you want them!



This young lady is making one of a series of detailed inspections that follow your multi-wall sack through the Hudson mill. It is just one of the assurances that every sack shipped to you is up to specifications.

Send today for informative literature on Hudson Multi-Wall Sacks. Just drop us a note.



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DISTRIBUTION . . .

• "Knows" himself. When he's out of his depth he admits it and calls for help.

As Others See Us: Talks like this, blunt and provocative, give the engineers the other side, let them get a slant on themselves.

The sales engineer must be a salesman, engineer, consultant, designer, and efficiency expert; and he has long felt the need of a group where he might chew the fat about his problems, listen to what others think about his job, and build a set of valid ethical standards which can serve as a focus for his fellows across the land.

He has it now in New York.

• **Monsanto Reorganization:** The New York sales district of Monsanto Chemical Co.'s Organic Chemicals Division is being reorganized to meet the coming retirement of Harry B. Miles, sales representative there for 29 years.

• **Crinkled Bags:** National Waterproof Papers, Inc. of Camden, N. J., has added a complete line of crinkled kraft multi-wall bags to its products. Coming in 2 and 6 plies, the bags are also available in waterproof, wax-impregnated, asphalt-laminated or polyethylene-coated styles.

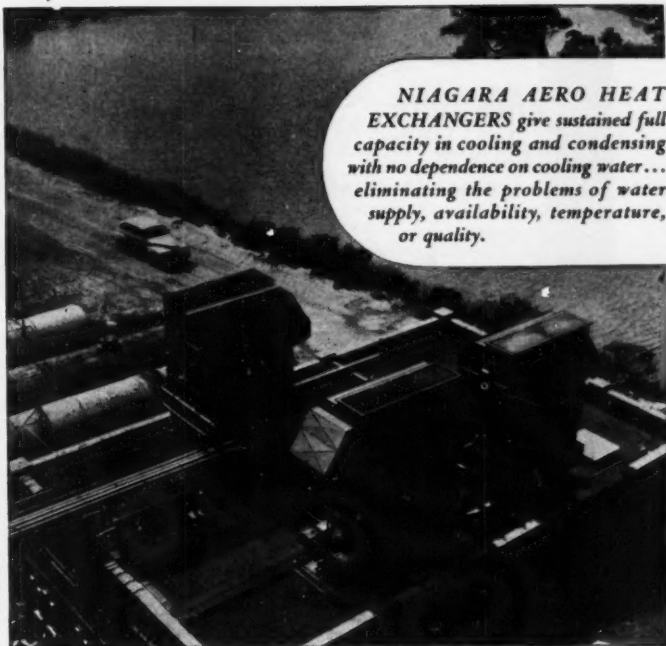
A new high-speed four-color press for printing on the bags is another recent acquisition by the company.

• **International Again:** Victor Chemical Works has joined the parade of American chemical companies entering the export market on a big scale (CW, Feb. 23; Mar. 8) with the recent formation of two new international corporations. Victor Chemical Trading Corp. will handle all company sales in the Western hemisphere, and Victor Chemical International Corp. will handle sales in the rest of the world.

Headquarters of the two new subsidiaries will be in Chicago.

• **Warehouse Debut:** A new 45,000-sq.-ft. warehouse has been opened by the Southwestern Drug Corp. at Corpus Christi, Texas. Company officials describe the new building as the most modern drug warehouse in the U. S.

• **Facilities Expansion:** U. S. Rubber's Naugatuck Chemical Division has opened its new plant and sales office for the manufacture and sale of rubber latex and plastic materials on the West Coast. The new building in Los Angeles contains customer technical service laboratories, facilities for compounding and storing rubber latex, and warehousing.



Niagara Aero Heat Exchangers at a Plant of the Heyden Chemical Corp.

NIAGARA AERO HEAT EXCHANGERS give sustained full capacity in cooling and condensing with no dependence on cooling water... eliminating the problems of water supply, availability, temperature, or quality.

Still Operations Improved by a New Cooling Method

• **NIAGARA AERO HEAT EXCHANGERS** cool the reflux supply or condense vapors at a vacuum by controlled evaporation of water directly on the heat exchange surfaces.

Liquid or vapor temperatures are always held constant by the Niagara "Balanced Wet Bulb" control method, which automatically varies the cooling effect proportionately to the load. The distillation is therefore uniform throughout all changes in climatic conditions the year around; it is the same in the heat of summer as in the freezing cold of winter. Continuous maximum production is thus insured.

Non-condensibles are effectively separated at the condensate outlet, with notable sub-cooling after separation for greater vacuum pump efficiency.

Use of Niagara Aero Heat Exchangers reduces your operating costs and removes many sources of your troubles in distillation column operation. Ask for new bulletin #120.

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MONSANTO

CHEMICALS — PLASTICS

FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information which may be helpful to you. This issue discusses:

Plasticizers

Hydraulic Fluids

Polychlorobenzene

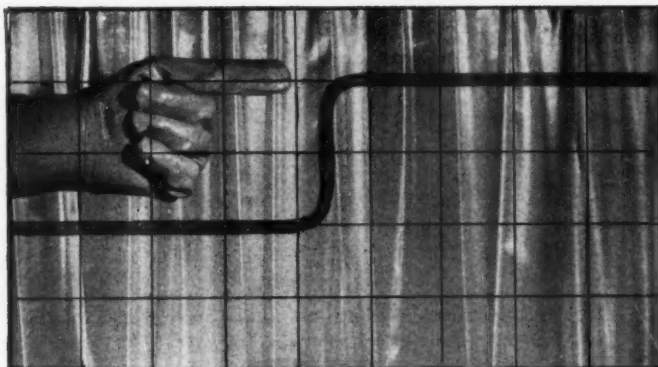
Extender-type Plasticizers

Sealing Agents

Tetrasodium Pyrophosphate

Al-purpose Detergent

Additional information on any of these subjects will be provided by our Chemicals Sales Office in response to your request by coupon or letter.



Step up vinyl production 33% to 100% without adding to your equipment

You can increase your output of extruded and calendered polyvinyl chloride products without adding new machinery. This forward step in efficiency is made possible by Monsanto's fast-fusion type plasticizers, Santicizer * 141, Santicizer 140 and Santicizer 160. Production increases generally are 33%, but, in some cases, they go up more than 100%.

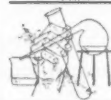
This extra volume is yours without sacrificing quality. Often better quality results from the use of these Monsanto plasticizers. You may add such advantages as flame resistance, low toxicity, improved low-temperature flexibility and other characteristics to improve your sales.

With the proper selection of your plasticizer or plasticizer blend, you will gain one or more of these advantages:

1. The Banbury cycle on the average can be speeded up 33% (in some cases more than 100%), increasing production as much as ONE-THIRD.
2. The Banbury rotor speeds can be REDUCED, lowering power demand without increasing the time needed to process...
3. The processing temperature can be reduced, eliminating danger of discoloring without lengthening the time cycle.
4. The peak power demand can be lowered and the average horsepower over the processing cycle reduced.

5. Increased amounts of fillers, stabilizers and lubricants need not increase the processing time.

For information on these production-boosting, cost-cutting, quality-building plasticizers, contact the nearest Monsanto Sales Office or mail the coupon for a copy of Monsanto's new booklet "Increased Capacity Through Faster Processing of Polyvinyl Chloride."



Research Chemists' Corner

You may find something new here

HERE'S A CHEMICAL WORTH INVESTIGATING

Properties of Monsanto Polychlorobenzene, Technical, indicate possibilities in a great variety of applications. Perhaps they suggest uses in your industry. Have a look at properties listed below. Then, if you are a qualified chemist and want to do some research, we'll be glad to supply you with samples. The coupon is for your convenience.

Typical Properties of Polychlorobenzene

Appearance	Dark brown liquid and solid
Crystallizing point	27.8°C.
Acidity (mg. NaOH/gram)	0.032
Specific Gravity at 100°/15.5°C.	1.494

Fractional Distillation (one sample)

Dichlorobenzene	2.2%
Trichlorobenzene	22.8%
1,2,3,4-Tetrachlorobenzene	51.8%
1,2,4,5-Tetrachlorobenzene	5.8%
Residue (Pentachlorobenzene, Hexachlorobenzene and other high boiling residue)	17.4%
Crystallizing Point of tetra fraction	40.00°C.

Solubility of Polychlorobenzene in Oil

In Monsanto tests the material dissolved readily in regular lubricating oil, SAE No. 10, at 25°C. Five per cent increments of the sample (by weight) were added to the oil until a weight equal to that of the oil itself had been added. No separation occurred, indicating good solubility of the material in this oil.

VALUABLE DATA FOR USERS OF HYDRAULIC FLUIDS



Just off the press is Monsanto's booklet, "Pydraul F-9... A report to engineering executives on a new nonflammable-type hydraulic fluid." The 12-page, file-size booklet gives valuable data for operators of die-casting machines, automatic riveters, automatic equipment, hydraulic presses and other equipment in which a nonflammable-type pressure transfer liquid is desirable.

The booklet gives specific details on the following characteristics of Pydraul * F-9: Fire resistance... high lubricity... non-corrosiveness... chemical stability... non-reactive qualities... pumpability... insolubility in water... nonvolatility. Pydraul F-9 contains no water or inorganic salts.

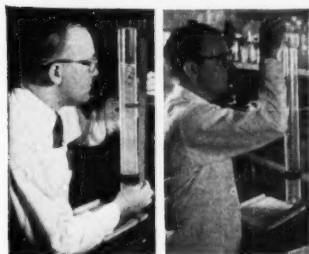
If you are interested in adding the extra safety of a nonflammable-type hydraulic fluid, plus the advantages of economy and efficiency, mail the coupon for a copy of the Pydraul F-9 booklet.

Monsanto to build phenol plant on West Coast

Construction of a new Monsanto plant to produce phenol will get underway in mid-year on an 83-acre site at Avon, California.

The new unit, which will be in production in 1954, will supply phenol to contract customers of the growing West Coast industrial area. It also will supply the expanding needs of Monsanto's Pacific Coast manufacturing operations.

Monsanto's West Coast plants make phenolic resin adhesives and various other phenolic resins. Future plans call for the addition of a number of industrial and agricultural chemicals to the western production.



FOAMING CONTROLLED

Monsanto AE-1—a new high-molecular-weight alcohol ester—has definite defoaming applications. Also, other uses that yield economies in various processing operations.

some AE-1 applications

It is used as a defoamer in producing ethyl alcohol from molasses . . . defoamer in producing glycerol from fats . . . for foam control in the manufacture of yeast and other fermentations . . . control of foam in certain bottle-washing operations . . . solving foam problem in polystyrene latex water dispersions . . . lubricant for vinyls that are extruded or calendared . . . coplasticizer for rubber hydrochloride and chlorinated rubber.

This list of uses may suggest some interesting applications to you. If so, write for samples of AE-1 and Technical Bulletin No. P-140.

$$\frac{1+1}{2} = 1+$$

Higher detergency from synergistic action

There are numerous places where the higher detergency effected through synergistic action affords important economies in industry cleaning and scouring.

Synergism is achieved by blending Santomerse® No. 1 and Monsanto tetrasodium pyrophosphate with the result that their combined detergencies are higher than the average of the two when used separately; higher than the detergency of either. This effect is of particular consequence in many phases of textile processing.

Many uses for TSPP

Monsanto tetrasodium pyrophosphate is also widely used as a soap builder, household and industrial cleaner and detergent, in bleaching, in dye baths as an assistant for putting certain types of dye in solution, in metal cleaning . . . For full information, send for Technical Bulletin No. P-24.

HB-40 — low-cost extender-type PLASTICIZER

At an l. c. l. price of 17¢ per pound (less in carloads), the use of Monsanto's HB-40 as an extender-type plasticizer will enable you to save as much as 30% to 50% in processing vinyls. Not only does HB-40 help reduce your costs very materially — it also helps you maintain your product quality. Available now in drum and car-load lots.

HB-40 is finding wide use in producing vinyl extrusions, vinyl pastes, vinyl slush moldings and vinyl calendaring. It is also of special interest as a low-cost extender-type plasticizer in polystyrene casting resins, polystyrene adhesives, molding polyvinyl carbazole, strip coatings for metals, floor tile compositions, asphalt base paints.

Send for full information; ask for Bulletin No. P-104.

now available

AROCLORS

in ample supply

As a result of increased production capacity, the greater availability of Monsanto AROCLORS® is welcome news to processors in many different fields who have long depended on the unique properties of these chlorinated biphenyl—chlorinated phenyls.

The AROCLORS find prominent uses in the electrical insulating field and in such widely differing applications as nonflammable hydraulic media, high-temperature and high-pressure lubricants, heat-transfer and expansion media, sealing compounds, adhesives and protective coatings, including plastics, pigments, lacquers, paints and varnishes.

The AROCLORS are very efficient and very economical, both when used alone to accomplish results not attainable with other materials and when used as extenders to enhance the properties of other products.

GET AROCLOR BULLETINS

There are numerous bulletins on the many applications of Monsanto AROCLORS—General . . . Chlorinated Rubber . . . Pliolite . . . Incombustible Lubricants in High-Pressure Compressors . . . Indirect Heater for Unit Control Operations . . . Co-Plasticizers for Polyvinylchloride . . . Co-Plasticizer with DOP for Vinyl Organosols and Pastes.

Investigate the AROCLORS! Please send for bulletins that interest you.

• • • • •

MONSANTO CHEMICAL COMPANY, 1700 S. Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto Canada Limited, Montreal.

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SEND LITERATURE:

- ☐ Pydraul F-9. ☐ Faster processing of Polyvinyl Chloride. ☐ Tetrasodium Pyrophosphate. ☐ AE-1. ☐ HB-40. ☐ Santomerse No. 1. ☐ The AROCLORS for . . .

(please state uses).

SEND SAMPLE:

- ☐ Polychlorobenzene. ☐ AE-1.

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WHAT DOES OUR BASIC POSITION IN PLASTICIZERS HAVE TO DO WITH

Simply this: Thousands of useful new products—like floor tile for your home, protective coverings for guns . . . and Mrs. Brown's new plastic upholstered chair are being made today of durable, flexible vinyl plastics.

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But *how good* these characteristics are depends upon the uniform high quality of the plasticizer. *That's where our story fits in.*

For we're able to control quality at every step in the production of Pittsburgh PX Plasticizers—from coal to finished product—because of our unique position as a *basic* and *integrated* producer.


Does it all add up? Plastics manufacturers will tell you that it does. For they're learned to count on the broad family of PX Plasticizers for consistent high quality and dependable deliveries. You'll experience these same basic benefits when you buy products from any of our other integrated divisions . . . products that are recognized, first and foremost, for their reliability.

Boltaflex Poinsettia Pattern

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DilsoOctyl Phthalate	DiOctyl Phthalate
DilsoOctyl Adipate	DiOctyl Adipate
DiButyl Sebacate	DilsoOctyl Sebacate
DiOctyl Sebacate	TriCresyl Phosphate
TetraHydroFurfuryl Oleate	

WBD 4088

PLASTICIZER DIVISION



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SPECIALTIES . . .



SHRINK CONTROL: For better fabrics, a 4-in-1 process.

Lending Textiles a Hand

Last week Warwick Chemical Co. introduced a novel single-resin, single-operation method for imparting durable water repellency; shrink, crease and spot resistance.

Key: undisclosed "hydrophobic resin." This development spotlights recent work in adding valuable characteristics to fibers, both natural and synthetic.

Wool, cotton, rayon, and the synthetic fibers all have certain desirable characteristics; all have their shortcomings. And removing these drawbacks has become an estimated \$20 million industry in recent years.

Latest process in this line is Warwick Chemical Co.'s (div. of Sun Chemical Corp.) Noraset, offered as the first single-resin method for lending to rayon and rayon-blends these qualities:

- Durable water repellency and spot resistance
- Durable wrinkle and crease resistance
- Durable shrink resistance

Precisely what the composition of Noraset is Warwick won't reveal, beyond stating it is a "hydrophobic resin." And until the pending patents are granted, Don Cagliardi, who directed Noraset's development, prefers to say simply it is a thermosetting—but not melamine—resin.

Processes of this sort aren't new. The growing use of rayons in men's clothing, for example, has largely depended upon such developments. Chemical ways to give the "worsted" feel and look, to impart wrinkle and

water resistance, made possible the year-round rayon suit.

All at Once: One point of the Warwick claim, that Noraset offers durable four-way treatment with just one chemical and one operation, is of particular interest. Heretofore, at least two compounds were necessary. Sometimes, because they were not compatible, a separate step was needed to apply each one.

In a competitive process, however, developed by American Cyanamid (probably largest supplier of textile chemicals), one operation also does the trick. Permel Plus, as it's tabbed, employs a stearamide bonded in with melamine resin for waterproofing; using more melamine imparts crease resistance and shrink control.

Cost of treatments of this nature seldom run more than 2¢ per yard of material, according to Warwick. Fabric weight is increased not more than 10%.

Following the war, widespread publicity was given to processes for reducing the shrinkage of woolsens. Typical compounds used, which frequently improved crease resistance too, were of melamine-formaldehyde

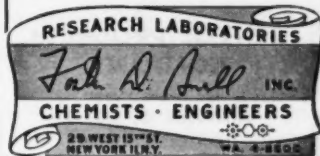


In Our "Hot" Lab

you can observe how radio isotopes are put to use in commercial research in testing of formulations and materials.

Possibly this latest tool can be of immeasurable value in enhancing your product and packaging.

Inquiries Invited



DIPHENYLTHIOCARBAZONE (DITHIZONE)

Reagent for Co, Cu, Pb and Hg.

PHENOLSULFONPHTHALEIN (PHENOL RED)

For estimation of Renal Function, Also as indicator

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As pH indicator and test for blood

BENZIDINE DIHYDROCHLORIDE

Reagent for test for blood

PROPYL GALLATE

An anti-oxidant for edible animal fats

Our research department has solved the synthesis of such complicated organic chemicals as PHENYLEPHRINE HYDROCHLORIDE U.S.P., TETRACAINE U.S.P. & METHONIUM HYDROBROMIDE pharmaceutical grade. We will be glad to supply these materials, as well as to develop synthesis and manufacture your specific products.

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For a progressive industrial Chemical manufacturer our laboratories developed . . .

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And we have, now, successfully placed it on a commercial production basis . . . It is these same research and production facilities, ideally suited to this kind of specialized work, that we place at your disposal. Your inquiry involves no obligation and will receive our careful attention.

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SAVE MONEY ON PACKAGING

WITH CONTAINERS
of MOLDED PAPER
by *Keiding*



Ideal for granulated substances, powders, soaps, abrasives, even some liquids and semi-liquids, Keiding Molded Paper Containers are amazingly strong, light in weight and low in cost.

You may find many economical uses for these containers. They're sturdy enough for shipping, attractive enough for a sales and display package, these containers are available in a wide variety of sizes and shapes. Standard color is white. Write for prices and samples.

Available in nine sizes, ranging from 1 pint to 5 gals., with covers tight-fitting. (Not recommended for shipping liquids.)

KEIDING PAPER PRODUCTS CO.

3048 North 34th Street, Milwaukee 10, Wis.
Largest Manufacturer of Molded Paper Containers

SPECIALTIES

(an example: Monsanto's Resloom).

Among the advantages of wool are considerable natural resiliency and water repellency. Improving these wool properties has seldom been emphasized, although many mills use processes for enhancing them and do not advertise the fact.

For the Others: With rayons and cottons, however, providing better wrinkle resistance has long been a problem. Some twenty years ago, in England, processes for boosting the anti-crease qualities in rayon were developed using urea-formaldehydes; the melamines also work well for this.

For adding water repellency to the cellulose fibers, a variety of treatments are on the market. Many of these—there are at least seventy branded processes available to textile mills—offer increased stain resistance in addition; most are mixtures of waxes and metallic salts. Well known products like DuPont's Zelan and Warwick's Norane are quaternary ammonium compounds. Craenette is zirconium acetate.

There are numerous applications for chemicals in textile finishing in addition to the ones mentioned. Special effects—the glaze of chintz, the stamped-in pucker of piqué—are obtained or maintained by means of the melamines also.

The effects of Sanforizing, primarily a mechanical pre-shrinkage process, can almost be duplicated now by chemical treatments. In the rayon field, this can mean sport shirts in standard collar and sleeve-length sizes; hardy shirts which can be washed like cottons.

Until the perfect fiber comes along, there will be big business in improving the textiles already available.

Glue for Silicones

Increasing use of silicones in treating paper and in coating glass containers has brought with it several problems. Frequently, the water repellent characteristic of the treated surfaces prevents intersurface bonding, or makes reliable labeling difficult. Recently Polymer Industries Inc. (Astoria, N.Y.) claims to have solved the problems with a new adhesive line called Glass-Weld.

Glass-Weld is a modified water-based glue, which functions in standard high-speed gluing machines. Polymer won't say just what the modification is, since patents have not yet been granted.

The pharmaceutical industries are among the first to utilize these new adhesives. Drug packaging researchers

found that ampoules and bottles, when coated with silicone, gave better stability to many products, reduced foam, and permitted more accurate dispensing and complete drainage of contents. Although only the inside of the container was coated with silicone, a certain amount of the silicone condensed on the outer surfaces during the baking stage of processing. And it was exceedingly difficult to stick labels to these bottles reliably.

Glass-Weld was able to overcome this difficulty; the use of silicone-coated containers has become routine.

The new adhesive also is said to work well with silicone-treated wood, paper, ceramics, and metals. Bags and cartons and similar containers can be fabricated of these materials using the new glue.

Certain types of glass—opal glass, brown glass, borosilicate glass, etc.—also presented trouble in labeling, even though not silicone-surfaced. Glass-Weld appears to work with these, too.

Polymers Industries is Selling Glass-Weld nationally, in drum quantities.

Definition Tightened

Growing sales of color shampoos has stirred the Federal Security Administration into re-examining the definition of coal-tar hair dyes. Now the FSA is proposing a new definition, which would tighten the law concerning such dyes.

The proposed interpretation would limit the term coal-tar hair dye to compounds intended solely for altering the color of the hair and which contain a coal-tar color, but no other poisonous or deleterious substance.

Thus color shampoos would not be included. Congress gave an exemption to coal-tar dyes, but that was before the tinting shampoos were on the market; there was no intention of exempting products which might get into users' eyes under conditions of normal use.

March 30 is the deadline for submitting comments.

Insecticide Situation

Formulators of commercial insecticides are concerned about the steadily decreasing effectiveness of residual insecticides. Last week the Department of Agriculture told Chemical Week that many organic insecticides are undoubtedly not the killers they once were, but are far from washed up. Research now cannot offer any helpful ideas, but USDA is depending on future work to provide the answers should these chemicals become ineffective for pest control.

Fred C. Bishop, assistant chief of



Chemical Progress

News of developments from General Electric's Chemical Division that can be important to your business.

G-E CHEMICAL RESEARCH MAKES POSSIBLE

New Uses for Plastics

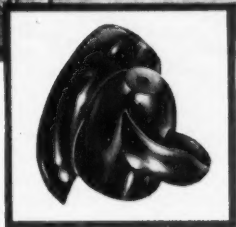


Development of G-E rubber-phenolic molding compounds widens use of plastics in applications requiring unusual strength and resilience.

Now General Electric chemical progress has greatly increased practical applications for plastics! G-E rubber-phenolics work successfully where other types of plastics often fail because rubber-phenolics have five to seven times the shock strength of conventional phenolic materials.

Typical of the new uses for G-E rubber-phenolics are the two dishwasher parts shown here. The silverware basket—formerly made of scarce brass—has the required strength and resilience to withstand dropped utensils and operating vibration. Like the impeller (see inset) it is resistant to hot water, strong detergents.

A few of the present uses for G-E rubber-phenolics include business machine parts, handles for heavy-duty machinery and bobbins for textile mills. Many more are sure to develop as industry takes advantage of this recent contribution of G-E chemical progress—other examples of which appear on this page.



Shining example! The new non-oily, easier-spreading furniture and auto polishes made with G-E silicones show how products may be improved by utilizing the remarkable properties of this new family of materials.

G-E varnished fabrics and tapes, part of the G-E line of insulating materials, have extraordinary resistance to moisture and heat-aging, are proving valuable for many dielectric and insulating uses.



For more information about any of the G-E chemical products or processes described on this page, write to General Electric Company, Chemical Division, Pittsfield 12, Massachusetts.



G-E's revolutionary new Monotop work surface (the one-piece G-E Textolite® backsplash-counter top for kitchens and vanities) is the result of G-E molding skill plus research in superior resins and varnishes for laminating purposes.

PLASTICS COMPOUNDS • SILICONES • INSULATING MATERIALS • GLYPTAL® ALKYL RESINS • PLASTICS LAMINATING, MOLDING, AND EXTRUDING

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...a dependable
non-ionic
detergent and wetting agent?

NEUTRONYX
600

- It is one of the most effective wetting and emulsifying agents in existence.
- Compatible with acids . . . alkalis . . . electrolytes . . . hard water and both cationic and anionic surface-active agents.
- Chemically stable. Does not deteriorate in storage.
- Can be used at elevated temperatures because of its low volatility.
- Neutronyx 600 is an aromatic polyglycol ether with a wide range of existing and potential uses for economical wetting and emulsifying effects.

Write for the
Neutronyx 600 Bulletin.



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West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

SPECIALTIES

USDA's Bureau of Entomology and Plant Quarantine, shows how serious the situation may become with these lab results: Strains of house flies have been bred that spend their entire adult life and lay eggs in cages thoroughly coated with deposits of DDT.

The degree of resistance of these cultured house flies varies a lot from generation to generation, and of course, the extra-tough laboratory strains aren't met with in nature—yet. There have been many reports, though, of flies, cockroaches, and bark beetles in the field building resistance to chemical controls. In the Orlando, Fla. area, house flies resistant to DDT within one season have developed a high degree of tolerance for lindane, chlordane, dieldrin, and toxaphene. In South Africa, blue ticks are stiffening their stand against benzene hexachloride, *Drosophila* (fruit fly) to DFDT.

Short Term Solution: Rigid, basic sanitation and space sprays (pyrethrum is recommended) are suggested by the USDA for control of flies until new products have been developed, Bishopp says.

One thing Bishopp wants to point out: Some of the loss in potency of the insecticides has been due careless use. Manufacturers should stress "read the label first," and "follow directions."

Vaporizers, using lindane, have been found effective against mosquitoes, flies, and ants. Vaporizers are not recommended, however, for 24-hour-a-day use in homes. Cafeteria kitchens, where the personnel seldom remains for more than 8-10 hours, are examples of where they may be used.

USDA is evaluating the possibilities of using baits such as molasses, fermented grain, and dried milk (sometimes made extra tasty to insects with ammonium carbonate) as a way to get the pest to up its poison intake.

Research Lines: Bishopp says that the USDA is working for an all-purpose insecticide. Some, however, feel that such an insecticide may be detrimental to so many "good" insects (predators that dispose of harmful ones) that it would be of questionable value.

There's a continuing probe into the phenomenon of resistance—its development and transmission. Now, though a coordinated, long-range program seems indicated, most effort is directed toward temporary expedients.

Among those working on the problems of insecticide resistance are Frank H. Babers and John J. Pratt, Jr. of the Division of Control Investigations of USDA's Bureau of Entomology and Plant Quarantine. They have found it hard to make any state-

ments covering all cases, say the following generalities are beginning to appear:

- Extreme resistance to one insecticide confers some resistance for other insecticides of widely dissimilar structure. When the level of tolerance is low, it is almost specific.
- The degree of resistance in house flies (flies are current object of research; conclusions regarding them will likely apply to other insects of economic importance) varies considerably from generation to generation.
- Most (but not all) strains of resistant house flies, either laboratory or field, tend to lose their resistance if exposure to the chemical ceases, but some strains maintain resistance for many generations.
- Once resistance to any insecticide is developed by house flies, development of resistance to other insecticides proceeds at an accelerated rate.
- The several resistant strains of house flies do not behave in an analogous manner; also, it is almost impossible to directly compare results between laboratories.
- The resistance of house flies is not due to the failure of the insecticide to penetrate the cuticle; it is evident even when the chemical is injected directly into the body cavity.

No Air Force Laundry: Plans to construct a \$1,848,000 laundry and dry cleaning facility at San Antonio, Texas for U.S. Air Force installations in that area have been abandoned. Project was halted when survey by Air Force and NPA indicated it was unnecessary. Commercial laundries in the area objected.

Resin Glue: A phenolic resin adhesive, Synco 128-CLW has been developed by Snyder Chemical Corp. (Bethel, Conn.) for the wood-working industry.

Aluminum Color: Aluminox 44 is a new process developed by Enthone, Inc. (New Haven, Conn.) for dyeing and protecting the surface of aluminum. Aluminox 44 is ordinarily colorless; dyes can be added to the solution and applied at the same time.

New Penicillin Combo: Merck and Co. is marketing a new antibiotic called Penstrep 4:½. Contents: ½ gm crystalline dihydrostreptomycin, 300,000 units crystalline procaine penicillin G, 100,000 units crystalline penicillin G potassium.

Carbon Black: Calocarb is a new dust-free carbon black made by J. M. Huber Co. (New York). Designed for open mill mixing of rubber, it is supplied in

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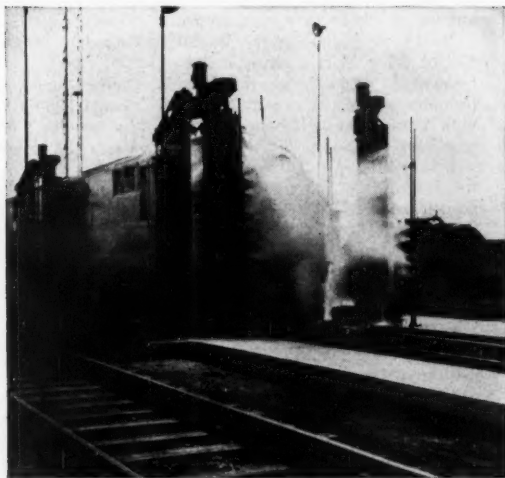
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Chemical Newsfront

AERO* ACRYLONITRILE

AERO Acrylonitrile, now prominently known for its use in the manufacture of acrylic fibers and acrylonitrile-butadiene rubber, continues to attract interest as a base product for expansion into other fields.

- | | |
|---------------------|---|
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| PAPER | Beneficial coatings, improved water and oil resistance, higher tensile strength, greater tear resistance are possible by using products based on acrylonitrile. |
| ADHESIVES | Acrylonitrile is useful in formulating cements that have the flexibility of rubber and cured adhesive strength of phenolic resins. |
| PLASTICIZERS | Acrylonitrile-butadiene elastomers are plasticizers and modifiers for polyvinyl chlorides, phenolic, urea, and melamine-formaldehyde resins. |

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CW, 3-32

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- ☐ Aluminum Stearates
- ☐ AMERICAN Explosives
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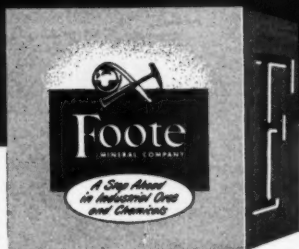
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SPECIALTIES

pellet form; 50 lb. or bulk shipments.

Chemical Containers: Keiding Paper Products Co. (Milwaukee) has developed a line of paper containers suitable for packaging soaps, certain liquids and semi-liquids. Containers are offered in nine sizes, from one pint to five gallons.

Insulating Varnish: G.E. 9700 is a new, oil-modified phenolic varnish now marketed by General Electric for electrical insulating, electric motor and generator cores, similar uses.

New Stripper: Antara Chemical (Div. of General Dyestuff Corp.) has developed a colloidal dye-sequestering agent tabbed Peregal ST. It can be used for stripping vat, sulfur, and direct dyes from fibers.

Vinylidene Chloride Sponge: Tuffy is a new vinylidene chloride mesh-sponge for kitchen use introduced recently on the West Coast, and now being pushed in the Midwest. Maker is S.O.S. Co. (Chicago). Designed for scouring dishes, the mesh's elliptical fiber shape is said to offer mild abrasive action.

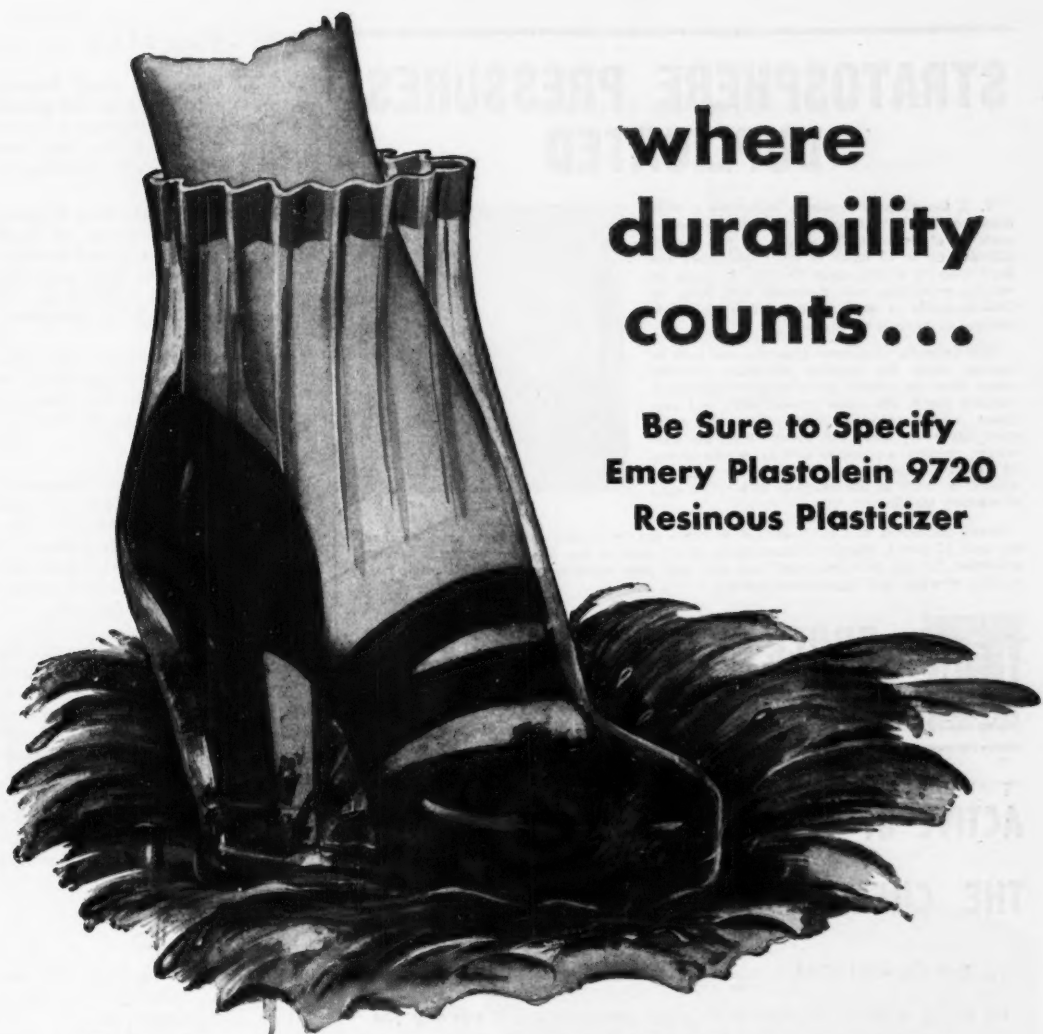
Dexter Acquisition: Dexter Chemical Corp. has just bought the Lake Chemical Corp., including right to its trade names and trademarks. Dexter Textile Chemical Division will produce the Lake products, principally detergents, wetting agents, and similar processing aids for the finishing and dyeing industry.

Mathieson Acquisition: Mathieson Chemical Corp. has acquired the fertilizer division of the Tovrea Land & Cattle Co., near Phoenix, Ariz. New plant will be hub of Mathieson's Agricultural Chemical Sales Division, providing the far West with fertilizers and insecticides.

Diamond Detergent: Diamond Alkali Co. (Cleveland) is offering a new detergent for dairies and creameries. It's called Diamond Powdered Acid Cleaner, is designed for cleaning dairy equipment.

Cortisone Tablets: Tablets of cortisone acetate, 25 mg., will be marketed soon by the Panray Corp. (New York). Company plans extensive line of cortisone specialties after completion of studies on dosage forms and combinations of the drug.

New Tape: A tape for labeling glass containers has been introduced by



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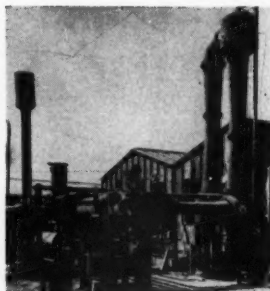
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3-15-52

SPECIALTIES

Tape-Mark Co. (St. Paul). Message can be inscribed with any dull-pointed instrument—writing surface is located beneath transparent film tape, and wording is permanently reproduced.

Up Glycol Production: Dow Chemical has expanded production of liquid polyethylene glycols, started manufacture of solid glycols. Solid polyethylene glycols will be available in average molecular weight of 1000-6000.

Paint Vehicle: Wallkyd is a new alkyd flat wall paint vehicle introduced by Reichhold Chemicals, Inc. One big advantage is said to be the low odor thinner used.

Fluoridation Note: While Chicago debates whether to fluoridate its water supply, a local bottled-water firm, Hinkley and Schmidt, is making use of the delay; is stressing in its ads now that its bottled well water contains the decay-preventing fluorine.

Socony Sells: Socony-Vacuum Oil, has sold its home-canning wax business to W.&F. Manufacturing Co., Buffalo, N.Y. W.&F. will continue Socony's trade name Paraseal, packaging wax bought from Socony's Buffalo refinery.

Montreal Plant: Montreal, Canada is planned as research headquarters for the Cleff (CCC) Chemical organization. CCC is a European firm, making paints and varnishes.

BOOKS

Fluid Flow Pipes, by Clifford H. McClain. The Industrial Press, New York, N.Y.; 123 pp., \$3.

A review of theory and application factors in reference to the flow of liquids and gases through piping and ducts, primarily from a dimensional standpoint. Included are diagrams, practical applications and worked-out examples.

Business Forecasting, by Frank D. Newbury. McGraw-Hill Book Co., New York, N.Y.; vii+273 pp., \$4.75.

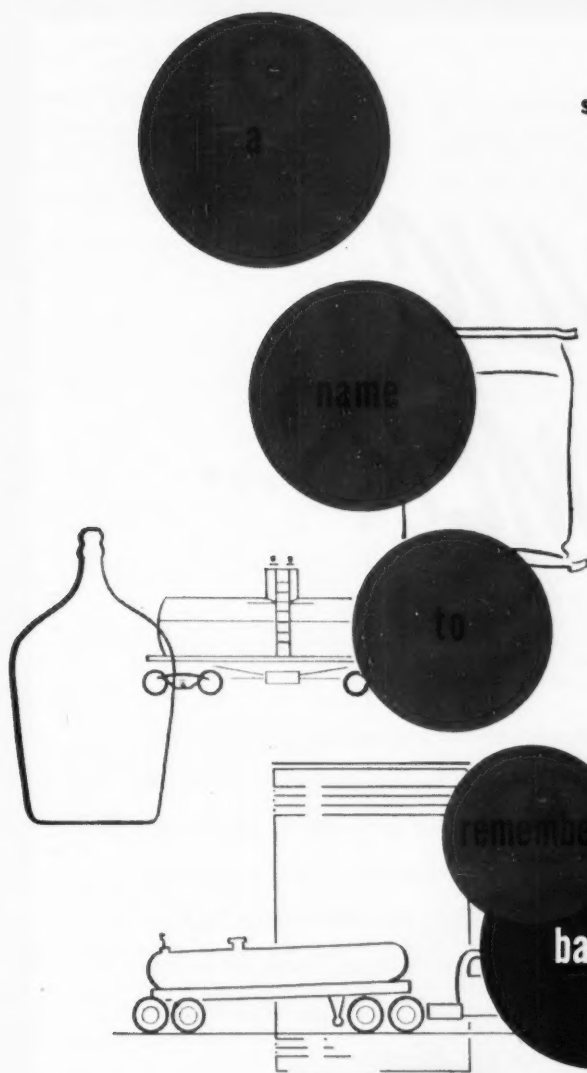
Book reviews principles and practices of "organized" business forecasting, taking into account fundamental economic principles. Forecasting is treated as a practical management tool in business life.

The Thermodynamics of the Steady State, by K. G. Denbigh. John Wiley & Sons, Inc. 103 pp., \$1.75.

A "Methuen Monograph" devoted to thermodynamic theories concerning

stauffer products

BHC (Benzene Hexachloride)
 Borax
 Boric Acid
 Boron Trichloride
 Carbon Bisulphide
 Carbon Tetrachloride
 Caustic Soda
 Chlordane
 Chlorine
 Citric Acid
 Cream of Tartar
 DDT (Dichlorine Diphenyl Trichloro-ethane)
 Fire Extinguisher Fluid
 Parathion
 Potassium Nitrate
 Rochelle Salt
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 Sodium Hydrosulphide
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open reaction systems, explains main ideas of literature on the subject.

Briefly Listed

RECOMMENDATIONS FOR WASTE DISPOSAL OF PHOSPHORUS-32 AND IODINE-131 FOR MEDICAL USERS, National Bureau of Standards Handbook 49, iv, 11 pp.; Government Printing Office, Washington 25, D.C., 10¢ per copy.

BLACK HORSE NEWS, new Merritt-Chapman & Scott Corp. (New York, N.Y.) company magazine covers firm's spheres of work in its various fields.

TITAN-SYSTEM No. 41, Gmelin Handbuch volume on titanium, its alloys and compounds. Available through Walter J. Johnson, Inc., 125 East 23rd St., New York, N.Y. or Stechert Hafner, Inc., 31 East 10th St., New York, N.Y., \$27.20.

MEETINGS . .

Amer. Inst. of Chem. Engineers, Atlanta Biltmore Hotel, Atlanta, Mar. 16-19.

Oil Trades Assn. of N.Y., annual meeting, Waldorf-Astoria Hotel, N.Y., Mar. 18.

Coml. Chem. Dev. Assn., annual open meeting, Penn Top-Statler Hotel, N.Y., Mar. 20.

Chicago Intl. Trade Fair, Navy Pier, Chicago, Mar. 22-Apr. 6.

Natl. Sanitary Supply Assn., annual meeting, Conrad Hilton Hotel, Chicago, Mar. 23-26.

Amer. Chem. Soc., national meeting, Buffalo, Mar. 23-27; Milwaukee, Mar. 30-Apr. 3.

Packaging Machinery Mfrs. Inst., semi-annual meeting, Dennis Hotel, Atlantic City, Mar. 30-31.

Natl. Packaging Exp., Atlantic City Auditorium, Apr. 1-4.

Tech. Societies Council of N.Y., atmospheric pollution meeting, Statler Hotel, Keystone Room, N.Y., Apr. 4.

Natl. Agricultural Chem. Assn., spring meeting, Fairmont Hotel, San Francisco, Apr. 7-9.

Amer. Pharm. Manuf. Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., Apr. 7-9.

Amer. Soc. of Lubrication Engineers, annual meeting & lubrication show, Statler Hotel, Cleveland, Apr. 7-9.

Amer. Zinc Inst., annual meeting, Statler Hotel, St. Louis, Apr. 21-22.

Assn. of Consulting Chemists & Chem. Engineers, general symposium, Belmont Plaza Hotel, N.Y., Apr. 22.

Amer. Oil Chemists' Soc., annual meeting, Shamrock Hotel, Houston, Apr. 28-30.

Amer. Drug Manuf. Assn., annual meeting, Homestead Hotel, Hot Springs, Va., Apr. 28-May 1.

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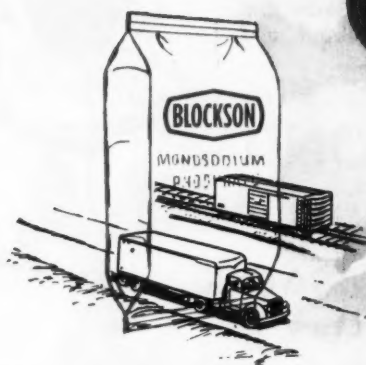
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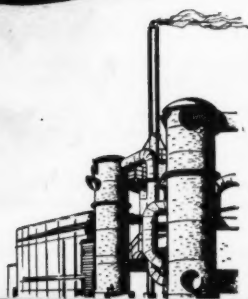


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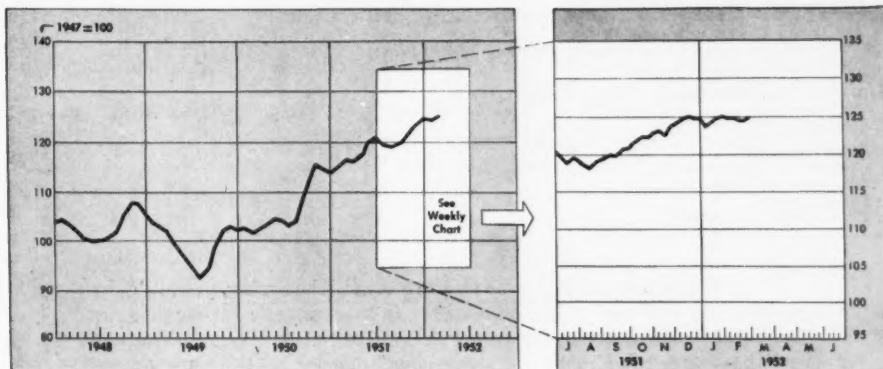
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MARKETS



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

MARKET LETTER

Pine oil-short formulators of disinfectants are wondering why supplies—seldom plentiful—are becoming even more elusive. Here's the answer: Most of it is going into high-priority flotation uses, especially for recovery of scarce metals from low-grade ores.

Oxygen supply is in near-balance now, with tightening in prospect if the armed services become demanding. But customers find oxygen short even today. Reason: Tardy returns on oxygen cylinders.

To remedy this situation, oxygen resellers will ask the Dept. of Justice for permission to pass along charges for demurrage. Removing this bottleneck by such means won't solve all problems. For supply will lag behind demand in the latter half of this year because of shortages of electrical equipment and compressors.

Don't believe all you hear about ethyl cellulose supplies getting tighter suddenly. Though the military does have ambitious plans for it as inhibitor tape for rockets, that use hasn't expanded yet to any appreciable extent.

Meanwhile one of the major producers is operating below capacity, and still looking for non-defense business.

Chlorine customers will have fewer shipping delays by July. At that time, 480 brand-new pressure tankcars will be ready for use. DPA will give this construction top assistance, will make available the needed nickel-bearing valves.

Softness in solvents brought some new price reductions this week.

Two producers trimmed prices on n-butanol, butyl acetate, and ethyl acetate by 2-3¢ a pound. New prices apply both to fermentation and synthetic grades, are (tankcars, pound-basis): n-butanol, 16¢; butyl acetate, 15¼¢; and ethyl acetate (85-88%), 11¢.

MARKET LETTER

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947=100)	125.3	125.2	117.3
Bituminous Coal Production (Daily Average, 1000 Tons)	1,715.0	1,703.0	1,894.0
Steel Ingot Production (Thousand Tons)	2,114.	2,104.0	2,001.0
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	236.8	229.2	213.2
Chemical Process Industries Construction Awards (Eng. News-Record)	\$1,538,000	\$1,762,000	\$19,975,000

MONTHLY BUSINESS INDICATORS—EMPLOYMENT (Thousands)

	Latest Month	Preceding Month	Year Ago
All Manufacturing	12,750	12,906	13,018
Non-durable Goods	5,475	5,583	5,762
Chemicals and Allied Products	536	538	526
Paper and Allied Products	403	409	423
Rubber Products	215	217	222
Petroleum and Coal Products	194	197	190

Because uses for styrene plastic bloom in the spring, producers will be operating at capacity despite cutbacks in the synthetic rubber program. The housewife's demand for new refrigerator models, housewares, and wall tile—more than half the styrene plastic market—will reduce chances of an oversupply.

Chemical output measured by the *CW* index is due to rise again after holding relatively steady around the 125 level (1947—100) since December. Seasonal buying by chemical process industries should make chemical sales pick up. But without a sales spurt, newly added output would only fatten ample inventories.

If you're thinking of putting up facilities for fixed nitrogen, your chances are better for solid forms like ammonium salts or urea. The USDA—with backing by the DPA—can afford to be choosy in granting priorities since pending applications are more than double new government needs.

You'll get quicker and more favorable action on a location in a deficit-nitrogen area, but lesser factors will count. They include: size of the business, previous experience, and date of filing.

Chemical resellers today have few premium money-makers compared with many a year ago. One conspicuous exception is phthalic anhydride, which is still in short supply. The resale price of 34¢ a pound is about 11¢ above manufacturers' schedules.

But phenol and citric acid, formerly resale mainstays, are now freely available.

Keep your eye on the fast-moving and fast-changing vinyl chloride industry; New producers are moving into the picture, others are consolidating.

Four developments are in the news:

(1) B. F. Goodrich is strengthening its monomer position. (2) Dow will become more active in the polymer. (3) Monsanto will become an important factor in both. (4) Diamond Alkali's venture with Shell to make monomer may be the start of a trend in this direction by other chlorine producers.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 10, 1952

UP		Change	New Price			Change	New Price
Carnauba Wax, ref., ton lots		\$.02	\$.98	Tung Oil, imp., tanks		\$.015	\$.40
DOWN							
n-Butyl Alcohol, tanks		.02¼	.16	Ethyl Acetate (85-88%), tanks		.02	.11
Butyl Acetate, tanks		.03	.15¼	Isopropyl Acetate, tanks		.015	.11
Dibutyl Phthalate, tanks		.03	.36				

All prices per pound unless quantity is stated

Easier Day by Day

The Defense Production Administration's latest bi-monthly "List of Basic Materials and Alternates," issued last week, shows an easing of many chemical raw materials.

There are exceptions—but DPA says, "Among chemicals, expansion . . . and better processing have improved the supply . . ."

The aim of DPA in publishing its bi-monthly listing of basic materials and alternates is to save critical materials by suggesting more available substitutes.

But a valuable by-product is its appraisal of supply-demand balance for a large number of chemical commodities, showing industry (insofar as DPA's information is accurate and up-to-date) where it stands—where expansion is still warranted, where cut-backs are in order.

DPA classifies materials in three categories:

Group I—insufficient for defense and essential civilian needs. Alternates should be used wherever possible. (DPA essentially recognizes a fourth, "super-critical" category by starring especially short items.)

Group II—approximately in balance.

Group III—in fair to good supply. These materials should be used as alternates for Group I and II.

Few are Shorter: The majority of chemical raw materials retain their

ratings in the preceding list. A few are in shorter supply: argon and cryolite were added to Group I, charcoal, ceramic fluorspar and monochlorotrifluoroethylene are now in Group II. Alkyl polysulfide polymers received an asterisk, and urea moved up one notch, from Group II to Group I. A large import price jump shot rutile up from Group III to Group I.

More are Easier: But more materials settled into an "easier" group. Moving from I to II were methyl chloride, nitric acid, refractory chromite, phenol and polytetrafluoroethylene; and descending from II to III were copper 8-hydroxyquinolinolate, cresols and cresylic acid, formaldehyde, nylon plastic, polyvinyl alcohol and acetate, polyvinyl butyrate, and quinoline. Additions to Group III are four waxes (bees, carnauba, candelilla and ouricury) and five resins (copal, damar, elemi, kauri and sandarac).

A complete listing of chemicals and related materials follows on p. 54.

Government Needs

Headquarters Air Materiel Command, Dayton, O.			
Bid Closing	Invitation No.	Quantity	Item
Mar. 17	52-584B	299505 gal.	Paint remover
Armed Services Petroleum Purchasing Agency, Washington, D.C.			
Mar. 20	52-50-B	various	Various compounds—lubricants & oils
Business Service Center Region 3, General Services Administration, Washington 25, D.C.			
Mar. 19	2W-880-R	12048 lb.	Soap, laundry powder
	2W-880-B	6250 lb.	Soap, grit, approx. 10-oz. cakes
Procurement Division, Supply Service, Veterans Administration, Washington 25, D.C.			
Mar. 17	A-98	2976 btl.	Hexavitamin tablets
		8640 btl.	Saccharin sodium tablets
Commanding General New York Quartermaster Procurement Agency,			
111 E. 16th St., New York, N.Y.			
Mar. 17	52-1159B	14000 lb.	Glue urea resin type powder spec. C-G-496

Government Awards

Item	Amount	Dollar Value	Supplier	Location
Armed Services Petroleum Purchasing Agency, Washington 25, D.C.				
Solvent, dry cleaning	1290000 gal.	208,980	Standard Oil Co. of Calif.	San Francisco, Calif.
Aviation Supply Office, 700 Robbins Avenue, Philadelphia 11, Pa.				
Paint	16500 gal.	33,330	Pacific Paint & Varnish Corp.	Berkeley, Calif.
Turpentine	35000 gal.	29,866	Crosby Chemicals, Inc.	De Ridder, La.
Pigment	288000 lb.	115,200	William C. Laughlin & Co.	San Francisco, Calif.
Rosin	1800000 lb.	167,400	Taylor, Lowenstein & Co.	Mobile, Ala.
U.S. Navy Purchasing Office, 180 New Montgomery St., San Francisco 5, Calif.				
Acid, hydrochloric (Munatic)	315000 lbs.	42,061	Stauffer Chemical Co.	San Francisco, Calif.

AROMATIC SOLVENTS

Benzol

Toluol

Xylol

Super Hi-Flash Naphtha

"Amsco-Solv"

Aromatic Solvents

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Supplied experimentally or commercially . . . Metal—Ingot-Cup-Shet-Rod-Wire-Ribbon-Cartridge

COMPOUNDS

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Position

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MARKETS

GROUP I

Acetylene
Alkyl phenols
Alkyl polysulfide polymers
Alpha picoline
Ammonia, anhydrous
Argon
Basic lead carbonate
Benzene
Butadiene
Butyl rubber
Calcium carbide
Carbon disulfide
Carbon tetrachloride
Chlorine
Chloroform
Cobalt salts and driers
Copper chemicals
Cryolite
Cyclohexanol
Dihydroxydichlorodiphenyl-
methane
Diphenylamine

Most critical

Fluorspar, acid grade
Ethylene oxide
Freon
Hexylresorcinol
Hydrofluoric acid
Iron oxide, yellow
Lead arsenate
Lead oxide, red
Litharge
Lithium salts
Methylene chloride
Naphthalene
Naphthenic acid
Natural rubber
Nickel salts
Nicotinic acid
Orthophosphoric acid
Oxygen
Parachlorophenol
Phosphate plasticizers
Phosphorus

Phthalic anhydride
Pine oil
Polyethylene resins
Pyrethrum
Pyridine
Resorcinol
Resorcinol resins
Rutile
Sebacic acid (refined)
Selenium compounds
Styrene
Sulfur
Sulfuric acid
Toluene
Trichlorethylene
Urea
Vegetable tanning mate-
rials:
Chestnut
Quebracho
Wattle

GROUP II

Abrasives, synthetic:
Silicon carbide
Aluminum oxide
Acetic acid
Adipic acid
Alkyd resins
Allethrin
Aniline
Anthraquinone dyes
Barium chemicals
Carbon black
Cellophane
Charcoal
Chrome green
Chrome orange
Chrome molybdate orange
Chrome yellow
DDT
Diatomite:
Calcined powder
Calcined and natural
brick

Fluorspar, ceramic and
metallurgical
Ethanolamines
Ethyl chloride
Ethylene dichloride
Ethylene glycol
Glycerine
GR-S synthetic rubber
Hydrogen peroxide
Hydroquinones
Isopropyl alcohol
Lead chromate
Maleic anhydride
Melamine
Melamine resins
Methanol
Methyl chloride
Monochlorotrifluorethylene
Nitric acid
Paradichlorobenzene
Paranitrophenol
Pentaerythritol

Perchloroethylene
Phenol
Phenolic resins
Polyester resins
Polytetrafluorethylene (Tef-
lon)
Refractories
Chromite
High alumina
Magnesite
Silicon carbide
Sillimanite
Sodium chlorate
Sodium cyanide
Sodium hydrosulfite
Sodium metal
Sulfadiazine
Sulfathiazole
Sulfur chloride
Titanium pigments
Xylene

GROUP III

Amyl acetate
Amyl alcohol
Benzaldehyde
Barite
Bentonite
Benzene hexachloride
(BHC)
Benzyl alcohol
Benzyl benzoate
Borax
Butyric acid
Calcium arsenate
Calcium chloride
Casein
Caustic potash
Caustic soda
Cellulose acetate
Cellulose butyrate
Clays, china and ball
Copper 8-hydroxyquinolino-
late
Cresols and cresylic acids
Diatomite, natural powder

Epsom salt (magnesium sul-
fate)
Ethers
Ethyl alcohol
Ethyl cellulose
Formaldehyde
Iodine
Methyl bromide
Methacrylates
Naphtha
Natural latex rubber
Nicotine sulfate
Nitrogen gas
n-Octyl alcohol
Nylon, plastic type
Polystyrene
Polyvinyl acetate
Polyvinyl alcohol
Polyvinyl butyral
Polyvinyl chloride
Propionic acid
Quinoline

Refractories:
Dolomite
Fire clay
Silica
Resins
Copal
Damar
Elemi
Kauri
Sandarac
Rosin
Rotenone
Shellac
Soda ash
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Celanese® Solvent 203 is a primary butyl alcohol solvent formulated expressly to meet the requirements of nitrocellulose lacquers and thinners, SAE brake fluids, and other applications. It is composed of normal butanol, with some isobutyl and amyl alcohols. Use it in most applications as a **cost saving replacement** for normal butanol.

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CHEMICALS by CELANESE

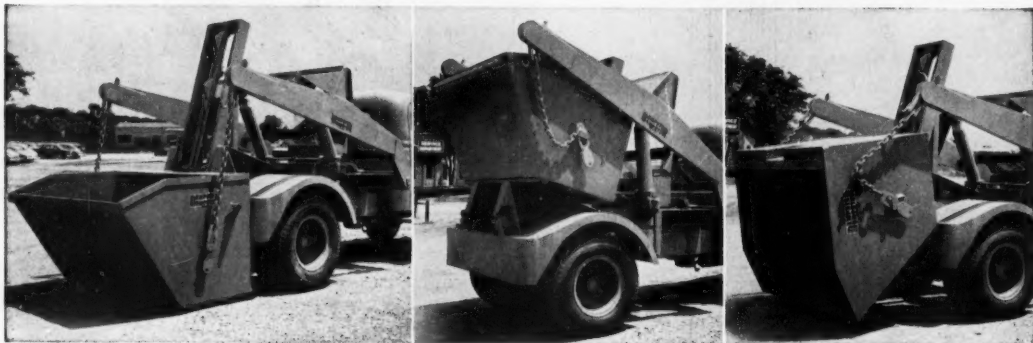
Butyl Alcohols
n-Propanol
Methanol
Acetaldehyde
Paraformaldehyde
Formaldehyde
Formaldehyde in Alcohols

Acetic Acid
Acetone
Butylene Glycols
Dipropylene Glycol
Propylene Glycol
Propylene Oxide
Tricresyl Phosphates
Special Solvents



*Reg. U. S. Pat. Off.

How The Dempster-Dumpster System Cuts Cost of Equipment . . . Eliminates Re-Handling of Materials!

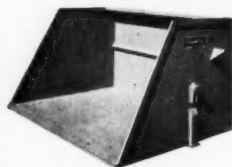
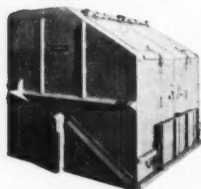
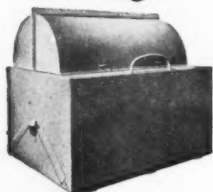
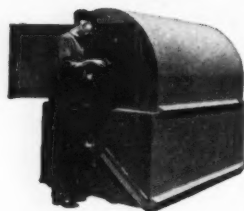


One Truck-Mounted Dempster-Dumpster Picks Up, Hauls and Dumps Scores of Pre-Loaded Containers, One After Another, Regardless of Size or Design for Handling Liquid, Solid, Trash, Dust, Light, Heavy or Bulky Materials.

You can eliminate large investments in trucks, reduce the cost of gas, oil and maintenance . . . avoid time lost by loading crews while trucks make haul . . . and eliminate re-handling of materials by installing the Dempster-Dumpster System!

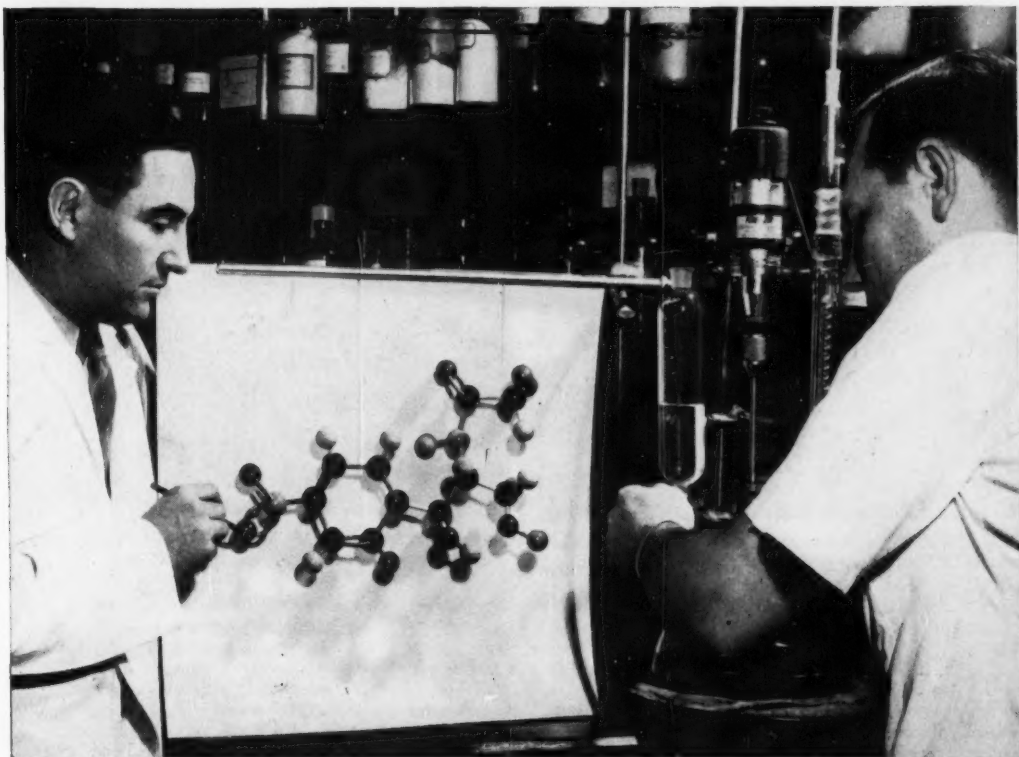
In the first place, three to five conventional dump trucks with crews cannot possibly do as efficient and economical a job as one truck-mounted Dempster-Dumpster with only one man, the driver. Dempster-Dumpster Containers are spotted at convenient accumulation points inside and outside your plant. The driver and his Dempster-Dumpster are constantly on the move servicing one loaded container after another. The Model LFW Dempster-Dumpster illustrated above handles containers up to 12 cu. yd. capacity. Containers up to 21 cu. yds. are available for use with our Type ARLF and Type DTLF Dempster-Dumpsters. Your Dempster-Dumpster and driver may be handling liquids on one haul, solids on another, waste materials on another, etc. The Dempster-Dumpster driver can pick up a load, put it in carrying position and dump it in 2 1/4 minutes!

Without question, the Dempster-Dumpster System is the most economical and most efficient method of plant materials handling by truck yet devised! Write today for complete information. Manufactured exclusively by Dempster Brothers, Inc.



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PRODUCTION



LOREN M. LONG AND HARVEY TROUTMAN eye model of Chloromycetin. Both played key roles in developing synthesis.

Doubled Output, Bet on Synthesis

Scheduled to go on stream this month, Parke, Davis' spanking new Chloromycetin plant at Holland, Mich., will double the company's output of the antibiotic. What's more, it will be the only plant in the world designed ex-

clusively for synthesizing an antibiotic.

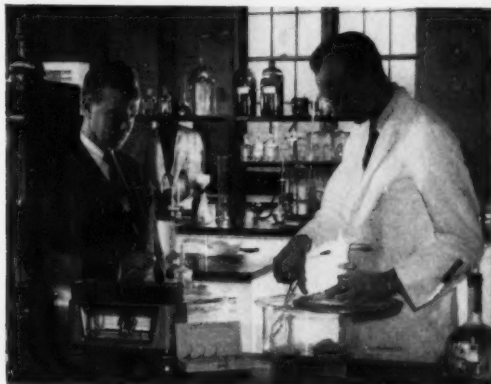
No Cinch: With the single exception of Chloromycetin, successful synthesis of an antibiotic has eluded the efforts of some of the country's top

scientists. And even Chloromycetin is no cinch to synthesize commercially; it's an intricate operation involving ten reactions of some thirty-odd steps.

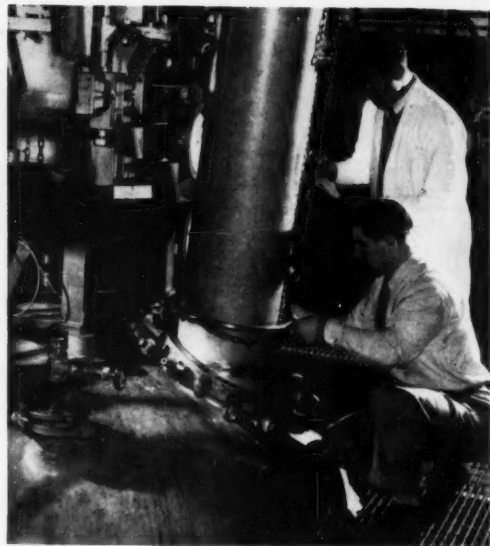
For some time, Parke, Davis has been turning out both synthetic and



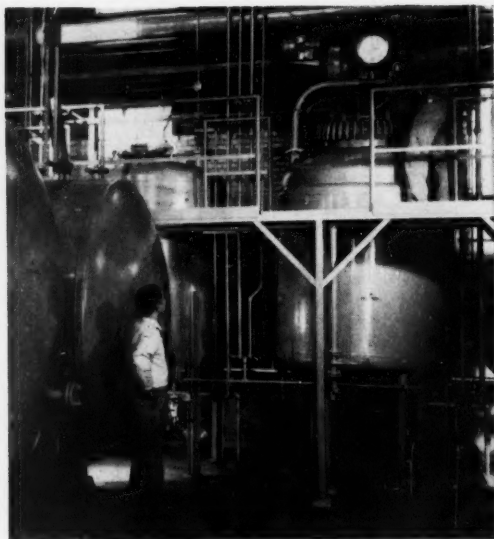
CONTROL AND PRODUCTION go hand-in-hand as control chemist and equipment operator make quality control check.



PLANT SUPERINTENDENT Donald Vink looks on as chemist removes dried sample from desiccator for analysis.



FLAKED ICE is added to initial reactor to cool exothermic reaction. Ice is used up at a rate of 18,000 lbs. per hour.



STORAGE TANKS and vacuum stills are only a small portion of the equipment used in intricate, thirty-step synthesis.

fermentation Chloromycetin. Both units were part of the same plant although housed in separate buildings.

Among industry there was some speculation on which process* would be the eventual survivor.

The synthetic process, for instance, is more efficient from the standpoint of output per unit space. And it is free of the contamination worries that

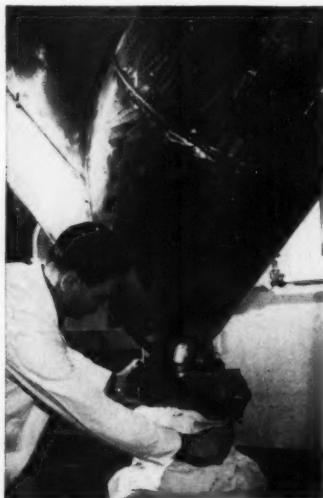
are associated with any fermentation method.

But the fermentation process is a lot more flexible. In fact, when plans were made for the present unit in 1945 (before Chloromycetin was known), the idea was to make streptomycin initially but to build a unit that could be converted to production of penicillin or other antibiotics. When it was completed in 1948, the decision was made to use it for Chloromycetin, but it can still be used

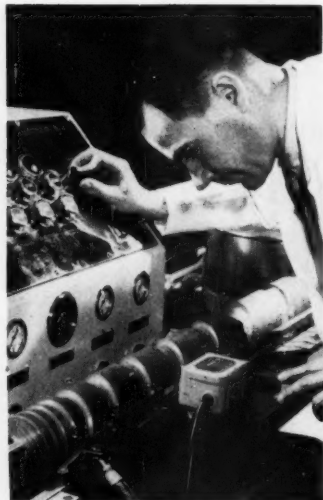
for other antibiotics—without any additional equipment—by simply rearranging the existing piping.

Apparently, however, the extra efficiency and other advantages tipped the scales in favor of the synthetic; for that's the process Parke, Davis chose when it decided an output boost was in order. The company took over a building that had been an Armour tannery, spent over a million dollars on new equipment and modernization.

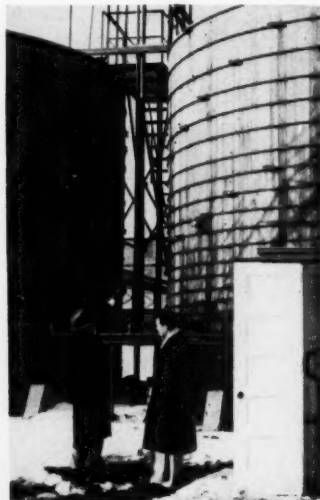
*For a comprehensive description of Parke, Davis' Chloromycetin processes, see *Chemical Engineering*, Oct. 1949, pp. 107-113.



TWIN BLENDER readies Chloromycetin for capsuling. Product is packaged . . .



. . . and then sent through this automatic labeling and cartoning machine.



WASTES are stored, pumped into well to avoid surface water pollution.

Baker Headquarters for METALLIC SALTS in tonnage quantities

Every day new demands confront industries which require tonnage quantities of Metallic Salts. These Salts have wide application and use in the manufacturing of colors and pigments, electronic and fluorescent products, pharmaceuticals, chemicals, and frequently as catalytic agents.

Many Baker Metallic Salts are of standard manufacture. But Baker also supplies chemicals with tailor-made characteristics when sufficient quantity for economic manufacturing is needed by specific industries.

If your processing requires salts of tin, nickel, lead, cadmium, cobalt, molybdenum, bismuth, zinc, manganese, etc., you will be interested in talking with your Baker representative.

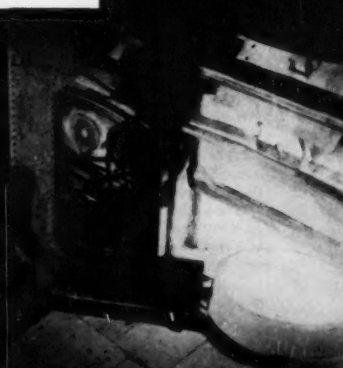
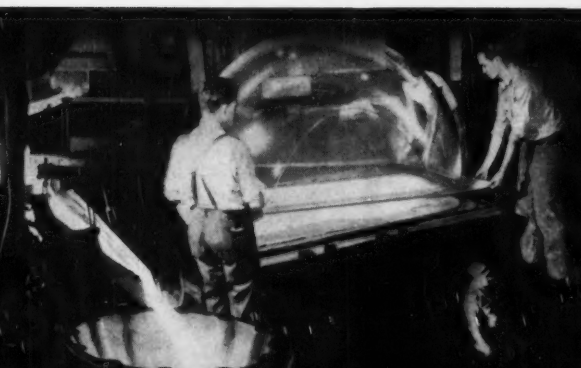
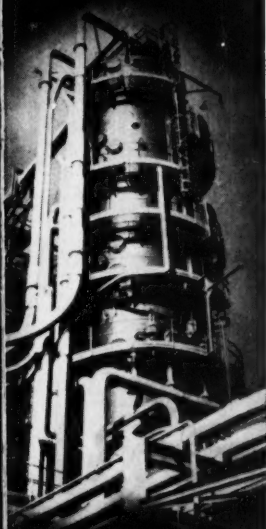
Baker's know-how and wide experience in manufacturing Metallic Salts of exacting purity are helping many companies gain trouble-free processing. It will pay you to make Baker your headquarters for Metallic Salts, and let us quote on your requirements.

J. T. Baker Chemical Co., *Executive Offices and Plant*
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Isopropyl Acetate
Secondary Butyl Acetate
Acetone
Methyl Ethyl Ketone
Ethyl Ether
Isopropyl Ether
Diisobutylene

Polypropylenes
Butadiene
Isoprene
Dicyclopentadiene
Aromatic Tars
Paratone
Parapoid
Paratoc
Paranox
Paraflow
Vistanex
Naphthenic Acids

The solvents and chemicals sold under the ENJAY* Oval Trade-Mark are outstanding for high quality and dependability. Every day more industries are calling on the long experience of the Enjay Company . . . making greater use of the diversified line of solvents and chemicals marketed by Enjay to increase product quality.

ENJAY products are marketed in bulk or in quantities to fit your requirements.

ENJAY COMPANY, INC., 15 West 51st St., New York 19, N. Y.

Tabs on Flow

Means of measuring the flow of fluid have been pretty much standardized in the process industries. But Fischer and Porter, an old hand at the business, has taken a new approach, come up with what it considers a significant advance in flow metering. The meters are just gaining industry acceptance. Actually, Fischer and Porter introduced the meters about a year ago, but production was limited, marketing was on an experimental scale. Now that early units have been proved in the field, a spate of chemical companies are showing interest in them.

Measured By-pass: In one form or another, the orifice meter has been the favorite means of measuring the rate of fluid flow. Essentially, the method consists of placing a constriction in the path of the liquid or gas. As the fluid passes through, the velocity is changed momentarily and the resulting change in static head is taken as a measure of the velocity (hence the volume) of flow. One of the troubles with the method is that velocity varies with the square root of—rather than directly with—the pressure differential.

The new Fischer & Porter meter, the V/A Cell, also employs an orifice, but, instead of measuring the difference in pressure, uses a standard rotameter to meter a continuous by-pass stream around the orifice. A simple adjustment on the by-pass line makes it suitable over a wide range of flow rates. And a magnetic coupling can change the position of the flow indicator into pneumatic pressure for remote indication and control.

Net result, says Fischer and Porter, is a combination of an orifice meter and rotameter which combines the advantages of both while eliminating many of the disadvantages.

Like the rotameter, for instance, the measurement is directly proportional to the rate of flow. But unlike the rotameter, it provides a wide flow range in a single instrument. Other features that the company figures will give it big selling points over orifice meters:

- Since there is a constant flow through the by-pass, there is no necessity for purge systems or seals. And because of the constant flow through the line, the meter can be used in outside locations where aqueous phases or condensation might collect at the orifice taps.

- All parts of the meter that come in contact with the fluid are made of Type 316 stainless steel, so it will be possible to meter corrosive liquids without the necessity of liquid seals. Furthermore, it can be used to meter

reasonably heavy or even emulsified fluids.

- Greater linear-scale chart accuracy at low flow rates.

- Compatibility with existing pneumatic instrumentation.

EQUIPMENT

Synthetics Last: Commercial quantities of work clothes made of Orlon acrylic fiber are now available for the first time, reports Travis Fabrics, Inc., which weaves the fiber. Said to have a life up to six times that of comparable cotton or woolen garments, they are manufactured by Worklon, Inc.

Travis tested the clothes under actual working conditions, reports they stood up well under severe conditions involving contact with hydrochloric acid, caustic soda and other normally corrosive chemicals. Other advantages claimed for the synthetic: easy laundering, no ironing necessary, good dimensional stability. Furthermore, says Travis, they are absorbent and possess desirable insulating properties.

New pH Meter: Beckman Instruments says it has a new, lightweight pH meter (Model N) that is the most rugged one available. Battery-powered, the instrument is designed for use in the field, plant or laboratory. Beckman reports accuracy within 0.05 pH, low (less than 2¢ an hour) operating cost, a built-in temperature compensation for the range between 0 and 100 C., and a "check pointer" that eliminates the need for frequent buffer standardizations.

Respirator Line: The Devillis Co. has added four respirators to its line: the MSC (cartridge) for protection against low concentrations of organic fumes; the MSF (filter) for light concentrations of nuisance dusts; the MSD (filter) for protection against poisonous and disease producing dusts; the MSE (double cartridge) against low concentrations of light organic fumes. Both the MSD and MSE have been approved by the Bureau of Mines.

Process Timer: The Henry G. Dietz Co. (New York) has brought out a process timer called the Timed Operations Pre-selector. Working on a single synchronous motor, it delivers a repetitious fixed-time impulse. Any multiple of the impulse can be pre-selected for the desired time interval of each cycle. The impulse can be used to actuate a number of electrical devices or circuits during a single

cycle or a process. Dietz says there is no limit to the number of cycles, length of the time interval or number of circuits that can be handled, claims it is suitable for any process where automatic operation with maximum flexibility is desired.

Corrosive Pump: Peerless Pump Division (Food Machinery and Chemical) is now marketing a Type DS pump for transferring process liquids—particularly corrosive ones or those with solids in suspension amounting to 5% of the total volume. Peerless says that discharge sizes (from 1 to 6 in.) make it suitable for practically all chemical process applications.

Heated Screen: Allis-Chalmers has a "Thermo-Deck" heating unit for use in conjunction with vibrating cloth screens. It is designed to eliminate blinding—the tendency to clog the screen—when handling fine or moist particles. A-C says use of its units permits more tonnage per hour; and since the need for manual cleaning is eliminated, down time will be reduced and more tonnage per shift will result. Screens surfaces can be removed without disturbing the electrical connections.

Ion Exchanger: Allis-Chalmers also reports a new ion exchanger to be used in boiler plants. Designed to reduce alkalinity in boiler plants where raw water alkalinity is high and chlorides and sulfates are in moderate concentrations, the exchanger is said to be specially suitable for makeup treatment where the steam is used primarily for heating and a large portion of the condensate is returned. Alkalinity and hardness are removed by two resin beds in a single tank, salt is used for regeneration.

Instruments Firm: A new company, Magnex Corp. has been formed to manufacture transformers, nuclear instruments, relay mechanisms and other electronic equipment. Magnex, the production affiliate of Patterson, Moos & Co., is controlled by Nathan Straus-Duparquet, Inc. Formed to commercialize items developed by Patterson, Moos and other firms, Magnex will turn out items not directly related to its transformer line.

PICTURES IN THIS ISSUE:

Cover (top) and p. 31—Lyn Crawford, McGraw-Hill; p. 20—Renner Adv.; p. 64—Natl. Bureau of Standards; p. 66—Arthur D. Little.

***When a miracle medicine brings health
in a hurry...***



U·S·S COAL CHEMICALS

are in the picture

● This generation has been blessed by an amazing succession of discoveries in the medical and pharmaceutical fields that have practically conquered many diseases previously considered "killers." One of the earliest and most important discoveries was the sulfa family.

U·S·S Pyridine that goes into the manufacture of the sulfa drugs is typical of the almost countless applications of U·S·S Coal Chemicals. The complete line of U·S·S Coal Chemicals also includes Benzol, Toluol, Xylol, Phenol, Cresol, Cresylic Acid, Naphthalene, Picoline, Creosote Oil and Ammonium Sulphate.

From mining of the coal to final processing in one of our nine coal chemical plants, United States Steel controls all the operations in the production of U·S·S Coal Chemicals. That's why you'll find United States Steel such a good source of supply. United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

U·S·S COAL CHEMICALS



UNITED STATES STEEL

RESEARCH

The Why Can Wait

Industry's growing concern with the smell of things is underscored by the debut of a new odor service group.

Olfactory experts are not sure just why substances are odorous or what a smell is, but they do deal successfully with a wide range of odor problems.

No one knows what an odor is. But that doesn't prevent a lot of people from doing things with odors; duplicating them, altering them, eliminating them and then creating new ones to fill the void. In an age of chlorophyll and "exotic" perfumes, odor is big business. Skeptics need only look to an expanding roster of industrial odor service organizations for proof.

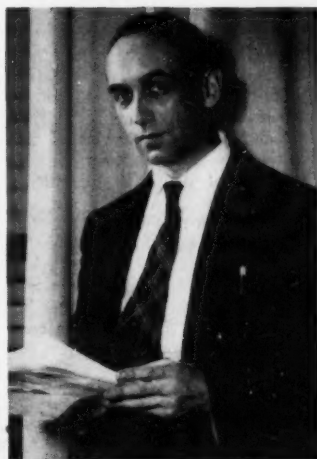
The incumbents—Arthur D. Little, Inc., Airkem, Inc., Foster D. Snell, Inc., United States Testing Co., Inc., Food Research Laboratories, Wallerstein Laboratories and others—recently found a newcomer in their midst. It's Sagarin Institute For Olfactory Research, Sifor for short.

Sifor may be new, but its namesake and director, Edward Sagarin, is hardly unfamiliar to the field of olfaction. Sagarin, formerly with Givaudan-Delawanna, Inc., might best be described as a maverick among odor experts. He out and out denies

the validity of current systems of odor classification in the absence of a valid theory of odor.

Agreement with Sagarin's stand is far from universal. Opposition is voiced for instance, by A. D. Little's Ernest C. Crocker, a leader in olfaction for several decades and co-inventor of the Crocker-Henderson system of odor classification. This system, which recognizes only four basic types of odor sensation, characterizes quality and intensity of odor on a scale of numerical digits. Now going on its 25th year, the method has enjoyed a good deal of popularity and considerable publicity.

Crocker admits his system isn't the last word in olfaction. But in his own words: "It suggests certain things that are possibly inherent in odor . . . should be useful in the search for truth about odor. It is intended to be a light in comparative darkness—a weak light perhaps, and flickering—



SIFOR'S SAGARIN: A maverick among the experts.

but at least, a light."

On two points at least, there is agreement: the desirability of odor classification on a sound basis; and the lack of a comprehensive theory of odors. Theories of odors may be roughly divided into direct radiation theory, emanation theory, site-filling theory and combinations of the three. None has been completely accepted or rejected, but the consensus is that molecular explanations provide the most productive field for future research.

The experts may not have closed the book on theory, but they have learned how to solve many of their practical odor problems. As a qualitative instrument in professional odor work, the nose still reigns supreme. And its owner is the individual who reports impressions which go toward a final decision on any one problem.

Of course in a subjective realm like odor judgment, the opinion of one individual may be suspect; panels or groups of smellers governed by psychological and statistical controls are the tools of modern olfactory testing.

Plenty of Jobs: The place of the odor tester in the society of scientific consultants is well-assured. Odor has made its mark on the consumer. Odor-appeal plays an important part in consumer acceptance of everything from foodstuffs to reading matter. Consulting organizations like Sifor, which are beamed to suppliers of the consumer market, have their work cut out in coping with problems like:

- Potential consumer acceptance of odorous products.

* Disagreeable odor of printing ink not long ago was the reason for subscription difficulties of a mass-circulation magazine.



Clocked from the Cosmos

WILLARD FRANK LIBBY, University of Chicago researcher, holds the radioactivity-detection apparatus which won him the 1951 Research Corp. Award. The device is used to pinpoint the ages of archeological specimens by measuring residual carbon radioactivity. Underlying principle of Libby's method: Radioactive carbon-14 produced by cosmic ray-induced nuclear transformations eventually becomes incorporated into plant and animal tissue. When the organism dies, radioactive carbon intake halts. Age is determined from residual radioactivity and the isotope's half-life.

- Effect of odorous ingredients on taste, or vice versa, particularly in foods, tobacco and beverages.

- Degree of similarity of odor and taste duplications; e.g., reproduction of odor-taste effect when a food is made in new equipment.

- Comparative efficiencies of deodorant soaps and cosmetics.

- Effect of dentifrice ingredients on mouth odors.

But the work of the olfactory consulting organization doesn't end with consumer products. In industry odoriferous processes and exhausts present problems that are right up the odor consultant's alley. Even process control has benefited from his services;

cases are on record in which a sensitive nose tracked down contaminants that could not be spotted in the laboratory.

Finding the odorous industrial culprit is usually only half the story. In most cases, industrial specialists (Aircem, Inc. among others) will provide the remedy. All in all, the *why* of odors may be a long way off. But the *what*—what can be done about them—is undeniably here. And from the look of things, here to stay.

Synthetic Stride: Twenty seven steps add up to a long stride ahead for synthetic chemistry. In that many steps, University of Rochester chem-

ists Marshall Gates and Gilg Tschudi have cracked a classic chemical puzzle—the synthesis of morphine.

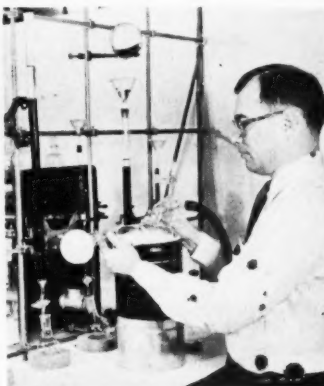
An alkaloid of opium, morphine was first isolated in 1805. Not until 120 years later was its structure characterized; all attempts at synthesis were fruitless until now.

The Gates-Tschudi method starts with Schaeffer's acid (2-naphthol-6-sulfonic acid), a familiar dye intermediate, arrives at morphine by an intricate route. Gates says the synthesis is tedious and expensive, has little chance of immediate practical application.

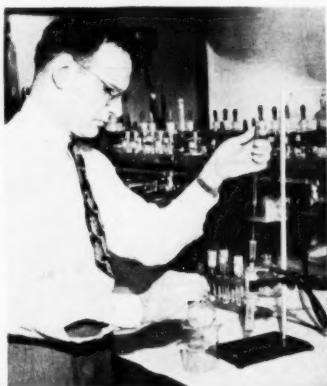
Despite its lack of commercial appeal, the new procedure should be



DEIONIZATION at several stages of the process is facilitated by columns of ion-exchange resins.



VACUUM DRYING is another yield-boosting innovation. Water sublimates off frozen sugar solution leaving a sirup.



SPECIALLY DESIGNED semimicro filtration apparatus, used prior to final crystallization, further minimizes loss.

New Custom Labels Spark Sugar Research

Good news for carbohydrate researchers comes this week from the National Bureau of Standards. Bureau chemists have successfully worked out methods for synthesis of sugars bearing radioactive carbon atoms.

In themselves, labeled sugars do not break new ground. But the NBS effort is noteworthy nevertheless, and for this reason: For the first time, sugars containing hot atoms in specific positions in the molecule have been prepared in good yield by chemical methods. Previously, tagged sugars had been prepared by biosynthesis; products contained a random distribution of isotopes within the molecule.

Significance of the NBS work should be far reaching. The labeled compounds are chemically indistinguishable from normal sugars, will be especially valuable in studies of carbohydrate metabolism. With the new custom-labeled molecules it's possible to trace the course of a single carbon atom through a maze of biochemical re-

actions—practically impossible before.

Other likely research uses: elucidation of organic reaction mechanisms; investigations of how bacteria convert simple sugars to cellulose. All of these fields are ripe for tracer research, have suffered in the past from a lack of properly tagged sugars.

Carbon-14, naturally enough, is the labeling isotope. It has been used before in the preparation of position-labeled sugars, but with little success. Syntheses were intricate, time-consuming, notably unproductive; yields averaged less than 10% recoverable radioactive material.

With the Atomic Energy Commission's blessings (and funds), NBS researchers—headed up by able* Horace Isbell—set their talents to the problem. First off came a review of the cyanohydrin synthesis, classic tool of carbohydrate chemistry, to determine where earlier workers went wrong. Bureau

chemists decided that macro procedures on a semi-micro scale were responsible for previous failures.

A revamping of the entire cyanohydrin method was undertaken; results were new catalysts, buffers, reducing agents, deionizing techniques and milder experimental conditions. The pay-off: yields of 40 to 60%—approximately a five-fold improvement over previous efforts.

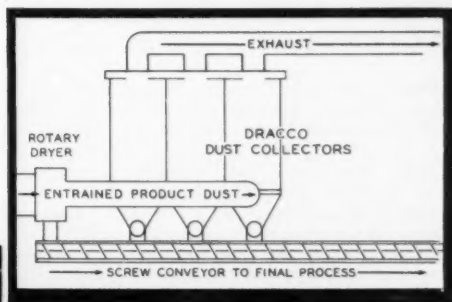
Thirteen different position-labeled sugars have been prepared by NBS. Some already are available for limited distribution, others will be released soon. Cost is steep—about \$1,000 per gram—but not prohibitive; laboratories rarely need as much as a gram. As a matter of fact, the largest single amount supplied to date has been one-quarter gram.

The Bureau says the custom-labeled sugars are being gobbled up by industrial and government research organizations as fast as they come out of the laboratory.

* Recent winner of the Hillebrand Award for his sugar researches.

FERRO CORPORATION, BEDFORD, OHIO, SAYS:

Today IS NO TIME TO GAMBLE...



Dracco Filter (center) at Ferro's Bedford plant recovers all napalm entrained in hot air exhaust from rotary drier (left). Diagram indicates how recovered material is discharged to screw conveyor, which moves all napalm to final processing.

Particularly with Production Efficiency!

The Ferro Corporation knows that today's industrial conditions with their high costs and accelerated production demands make peak-efficiency operation a must!

At its Bedford (Ohio) napalm manufacturing plant, Ferro is using Dracco Dust Control Equipment, which assures high efficiency by recovering 1% to 5% of the napalm processed.

Napalm is used to make jellied gasoline for fire bombs and flame throwers, and during processing, it is dried in a huge rotary drier with a blast of 320° F. air. This blast entrains fine napalm dust, which would be lost except for the reclaiming action of Dracco Equipment.

The dusty air is exhausted from the drier through a Dracco Multi-Bag Filter which re-

covers all the entrained material. The result is that none of the product is lost and Ferro's plant and surrounding areas are kept clean.

This is typical of many installations in which Dracco Dust Control Equipment guarantees top-efficiency production. Why not investigate the application of Dracco Equipment and Dracco techniques to your dust control problem?

DRACCO CORPORATION

Harvard Avenue and East 116th Street
Cleveland 5, Ohio

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RESEARCH

getting more than a cursory inspection. Interesting feature: codeine is one of its synthetic intermediates.

Double Supplement: Both penicillin and bacitracin are incorporated in Commercial Solvents Corp.'s newest antibiotic feed supplement. It's called Penbac, contains not less than five grams of bacitracin and one gram of the new, stable l-phenamine penicillin G per pound of supplement.

More Toxicology: A new \$2-million Haskell Laboratory of Industrial Toxicology is in the cards for the Du Pont Co. The research addition, to go up near Newark, Del., will provide enlarged facilities for the company's industrial toxicology department, which has been located at the company's Wilmington experimental station since 1935.

Aside from strict toxicological pursuits, the new laboratory will enable the company to broaden basic research in two other fields: causes of industrial fatigue; factors that make clothing uncomfortable.

New Blues: Three new phthalocyanine blues are the news from the laboratories of Thomasset Colors Inc. They're Aquamarine Blue 1670, Synthalline Blue 1950 and Synthalline Blue



The Broad View

NEWLY CREATED post of Science Director at Arthur D. Little, Inc. is filled by physicist Howard O. McMahon. McMahon won't be responsible for assignment, execution or administration of research. Rather, he'll be concerned with over-all strengthening and integration of scientific techniques. The job is believed to be a new twist in research management.

Flushed 1949. Applications range from wall paper coloring to paint and enamel manufacturing. Whittaker, Clark & Daniels, Inc., will distribute the new products.

Trypanosome Tripper: Hoffmann-La Roche researcher Robert J. Schnitzer is credited with the discovery of the first antibiotic capable of stopping trypanosomes, causative agents of African sleeping sickness, among other diseases. In laboratory tests, the antibiotic (known only as X 948) cured and prevented trypanosome infections in mice.

Unfortunately, the new antibiotic is too toxic for use with human subjects. But it raises hopes of finding other effective, less toxic therapeutic agents.

Patent Offer: U.S. Patent No. 2,585,644 has just been released by Atomic Energy Commission for royalty-free public use. The liberated patent describes a process for producing fluorocarbons by the reaction of bismuth pentafluoride with higher hydrocarbons at elevated temperatures.

Count-Cutter: Triethylene melamine sharply reduced white blood counts in six of eight leukemia sufferers treated in recent clinical tests. Lederle Laboratories Div. (American Cyanamid Co.) reports these results, but tempers hope with a note of caution: The compound is relatively toxic; dosage must be carefully regulated.

Peroxide Eliminator: Paul-Lewis Laboratories, Inc. (Milwaukee, Wis.) is just out with Catalase, an enzymatic product for the decomposition of hydrogen peroxide. Potential uses are in conjunction with the use of peroxide in milk preservation, cheese manufacture, bleaching, animal husbandry and foaming applications.

A clear, stabilized enzyme solution, Catalase is standardized to decompose 75 times its weight of 100% hydrogen peroxide under optimum conditions (0 to 10 C). In practice, however, higher concentrations of the enzyme would probably be used.

Aldehydes Down Under: Aldehydes from eucalypt lignins is the theme of just-completed research by the Australian Commonwealth Scientific and Industrial Research Section. Findings: Vanillin, syringaldehyde and a third methoxyl-free aldehyde were obtained from nitrobenzene-oxidation of eucalypt woods. The methoxyl-free member was identified as *p*-hydroxybenzaldehyde after chromatographic purification.

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EQUIPMENT — used — surplus

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Centrifugals, Bird Rubber Covered, First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Centrifugals 40" Evandur, First Machinery Corp., 157 Hudson St., New York 13.

Condensers, Coll, St. St., 40 sq. Ft. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Crystallizers, Swenson Jktd. First Machinery Corp., 157 Hudson St., New York 13.

For Sale

Drives—1½ HP to 10 HP—Faute & Netto—
20 RPM to 70 RPM. Chemical & Process Ma-
chinery Corp., 146 Grand St., New York 13, NY

Dryer, Vacuum shelf, Devine, double door, 17
shelves, pump, condenser, 3. Consolidated Pro-
ducts, 18 Park Row, N.Y. 38. Barclay 7-0600.

Dryer, Vacuum Shelf, 44"x44" shelves, MD
pumps, complete. Eagle Industries, 110 Wash-
ington St., N.Y.C.

Dryers, Beal Challenger 4"x27" dryers com-
plete, gas fired, one oil fired. Chemical & Process
Machinery Corp., 146 Grand St., New York 13.

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solenoid tripping device for cutoff valve. Ma-
chine approximately 18 months old and has had
very little use. Original cost \$2,750. If inter-
ested call or write Husky Oil Company attention
of C. A. Colbern, Box 380, Cody, Wyoming, or
telephone Cody, Wyoming, 500.

Filter, 8"x12", Feline all 5/5 Rotary Vacuum,
Consolidated Prods., 18 Park Row, N.Y. 38.

Filter, Sweetland #3, 29 leaves. Perry Equip.
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Filter Press, 30"x30", aluminum, 45 chambers,
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Filter Press, 30"x30", iron, Shriver and John-
son, 35-40 chambers, 6. Consolidated Products,
18 Park Row, N.Y. 38 Barclay 7-0600.

Filter Presses, all sizes and types. Process In-
dustries, 305 Powell St., Brooklyn 12, N.Y.

Kettle, Reaction, 12 gal. Inconel, Jkt'd. & Agit.
Perry Equip., 1415 N. 6th St., Phila. 22.

Mill, Ball Hardings 4½"x2". Perry Equipment
Co., 1415 N. 6th St., Phila. 22, Pa.

Mill, New Rubber Mills, 6x12, 6x14, 6x16;
Johnson joints, Complete. Eagle Industries, 110
Washington St., N.Y.C.

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plete. Eagle Industries, 110 Washington St., NY.

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Park Row, N.Y. 38. Barclay 7-0600.

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Pebble Mills; 8"x8". Porcelain lined. First Ma-
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ment Clearing House, 289 10th St., Bklyn 15.

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Tablet Press, Stokes R, single punch, Consoli-
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Co., 1415 N. 6th St., Phila. 22, Pa.

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Tank, 5/5, 3,000 gal. for truck. Perry Equip-
ment, 1415 N. 6th St., Phila. 22, Pa.

Tank, 5700 gal., 5/5, Horiz., New. Perry Equip.,
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BOOKLETS

Chemicals

Esters

36-p. booklet devoted to esters, details physical properties, uses and shipping data for more than 30 of the firm's esters and contains tabular information on the solubility of various resins in some of the esters and on the performance of these esters in nitrocellulose lacquers. A section on specifications and test methods is also included. Carbide and Carbon Chemicals Co., 30 East 42nd St., New York, N.Y.

Chemicals

40-p. 1952 catalog covering division's products, including aldehydes, ketones, solvents, acids and glycols; gives data on uses, applications, properties, specifications, shipping, and toxicological details for many of compounds. Celanese Corp. of America, The Chemical Div., 180 Madison Ave., New York, N.Y.

Monomers

Booklet listing over 250 research and production monomers, including such types as vinyl, allyl, and diallyl esters of straight chain acids, alky acrylates and methacrylates, etc. Monomer-Polymer, Inc., Leominster, Mass.

Equipment

Plastic Paint

8-p. bulletin describing the character-

istics, applications, methods of use, and performance of plastic paint and explaining its corrosion resisting action against marine atmospheres, chemical attack, abrasives, etc. The Corrosite Corp., Chrysler Bldg., New York, N.Y.

Protective Coatings

Technical data sheet consists of chemical resistance chart showing resistance ratings of series of "Prufcoat" coatings to some 69 corrosive chemicals—in both concentrated and dilute form. Prufcoat Laboratories, Inc., 50 East 42nd St., New York, N.Y.

Concrete Pipe Coating

4-p. folder containing information on characteristics, working properties, uses and methods of application for concrete pipe coating, developed to protect concrete pipe against chemical attack of sewage and industrial wastes. Hamilton Kent Mfg. Co., 225 Gougher Ave., Kent, Ohio.

Blending Systems

8-p. booklet covering the advantages, operation and construction of intimate blending equipment specifically designed and engineered as a system for handling fine powders and dusts in the insecticide field. Sprout, Waldron & Co., Inc., Muncy, Pa.

Testing Instruments

36-p. illustrated catalog covering 80 dif-

ferent testing instruments for the paint and other industries. Items included here are viscometers, constant temperature baths, film applicators, drying time recorders, impact testers, portable gloss and reflection meters, etc. Gardner Laboratory, Inc., Bethesda, Md.

Speed Drives

8-p. booklet on electrical transmission drives describes its operation and construction and discusses seven basic functions of this method of power transmission; diagrams and tabular charts give data on basic speeds and horsepower-torque characteristics of the drive. Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., Cleveland, Ohio.

Explosion-Proof Motors

Bulletin explaining construction features of firm's explosion-proof motors, which are available in two types—the fan-cooled or non-ventilated. Allis-Chalmers, 1150 S. 70th St., Milwaukee, Wisc.

Blending System

12-p. folder discussing construction features, flexibility, and application of system designed for blending, compounding or mixing of lube oils, beverages, coolants, chemicals, liquid foods and other liquids. Sketches show operation details and various types of installations. Bowser, Inc., Fort Wayne, Ind.

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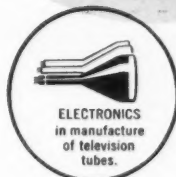
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